

INTRODUCTION

DIAGNOSTIC INFORMATION

The Electrical Diagnosis section contains the following types of diagnostic information (the way in which the information is arranged may vary from system to system or vehicle to vehicle):

- Electrical Schematics
- Component Location Lists
- Harness Connector Faces
- Troubleshooting Hints
- System Checks
- System Diagnosis
- Circuit Operation Descriptions
- Harness Routing Views

Using these elements together will make electrical troubleshooting faster and easier. Each element is described below.

The **Circuit Schematic** shows the electrical current paths when a circuit is operating properly. It is essential to understand how a circuit should work before trying to diagnose a failure.

The **Component Location List** helps to find where the components of a system can be located. A brief statement of the location is given and also a reference to a drawing that shows the component and its connecting wires. These **Component Location Views** are in SECTION 8A-201.

The **Harness Connector Faces** show the cavity or terminal locations in all the 4 pin or larger connectors shown in the schematic. Together with the wire colors and terminals given in the schematic, they help locate test points. The drawings show the connector faces as seen after the harness connector has been disconnected from a component or mating connector.

The **Troubleshooting Hints** offer short-cuts or checks to help determine the cause of a complaint. They are not intended to be a rigid procedure for solving an electrical situation. Rather, Troubleshooting Hints represent a common-sense approach, based on an understanding of the circuit.

The **System Check** gives a summary of how the system should be operated and what should happen. This is especially important when working on a new system. The System Check will help identify symptoms, lead to diagnosis and confirm normal operation of the system after repair.

The **System Diagnosis** provides a procedure to follow that will locate the condition in a circuit causing a malfunction. If your own knowledge of the system and the Troubleshooting Hints have not produced a quick fix, follow the System Diagnosis. All procedures are based on symptoms to assist in locating the condition as fast as possible.

The **Circuit Operation** describes the components and how the circuit works.

SECTION/PAGE NUMBER

Sections are organized by subsystems with most containing a circuit schematic and the associated text. This makes the section easy to use, since the page number will stay the same year after year. For example, the Cruise Control schematic will always begin on page 8A-34-0. The other information for Cruise Control follows and is paged 8A-34-1, 8A-34-2, etc.

Some sections may have more than one circuit schematic, such as Power Distribution, Interior Lights and Air Conditioning. The circuit of interest can either be located by using the Index or by a quick look through the related section.

All the engine circuits for a particular engine VIN type are in the same section. This makes that section easy to use, since schematics for other engines are not in your way. The Instrument Panel schematics are organized similarly. If you are working on a vehicle with a Digital Cluster, only the schematics that apply to that vehicle's Digital Cluster will be in the section you use. Information on the Indicators and Gages Clusters will be in other sections.

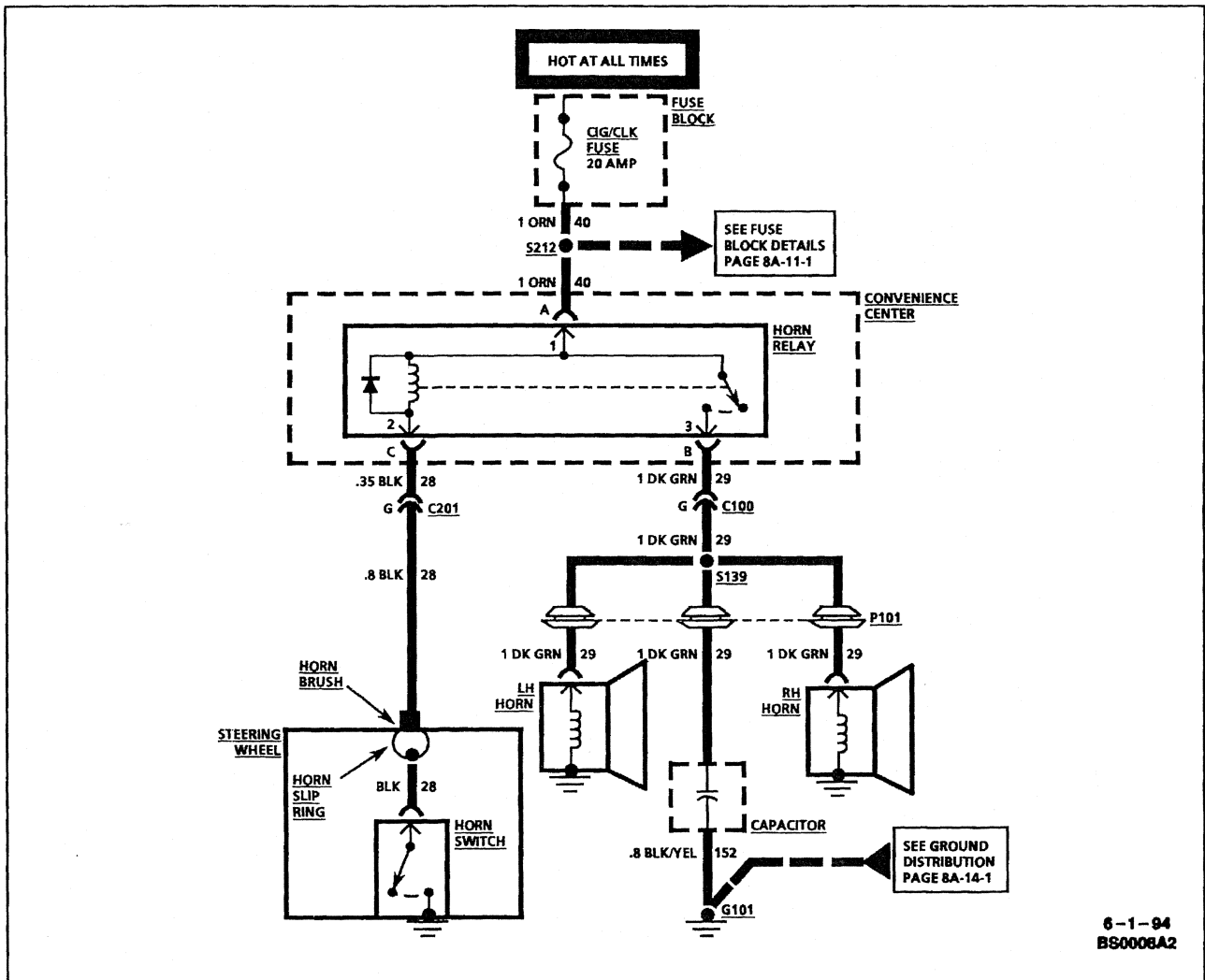


Figure 1—Typical Horn Schematic

SCHEMATICS

Schematics break the entire electrical system down into individual circuits. Wiring which is not part of the circuit of interest is referenced to another page, where the circuit is shown complete.

! Important:

- It is important to realize that no attempt is made on the schematic to represent components and wiring as they physically appear on the vehicle. For example, a 4-foot length of wire is treated no differently in a schematic from one which is only a few inches long. The number of cavities for each connector is listed in the Component Location List. Similarly, switches and other components are shown as simply as possible, with regard to function only.

When diagnosing a Horn problem, the technician would reference the Horn section. The schematic in Figure 1 is a typical example of what would be found in a Horn section of SECTION 8A, along with the following text.

Voltage is applied to the Horn Relay at all times. When the relay coil is grounded by closing the Horn Switch, the relay contacts close. When the relay contacts are closed, both the LH and RH Horns are energized.

COMPONENT LOCATIONS

To locate the schematic components on the vehicle, use the Component Location List. Refer to "Typical Entries in the Component Location List."

Listed in the left hand column are the components, connectors, grounds and splices shown on the schematic. To the right of the component is the location, "Under RH side of IP." Reference to LH and RH is made as though

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the technician was sitting in the driver's seat. On the same line, in the next two columns, are page and figure references for SECTION 8A-201, "Component Location Views." In this case, you are directed to Figure 4 on page 8A-201-1.

Where connectors are listed, the number of cavities is provided. This represents the total number of cavities in the connector, regardless of how many are actually used. This information is provided to help identify connectors on the vehicle. In the far right column is a page reference where a

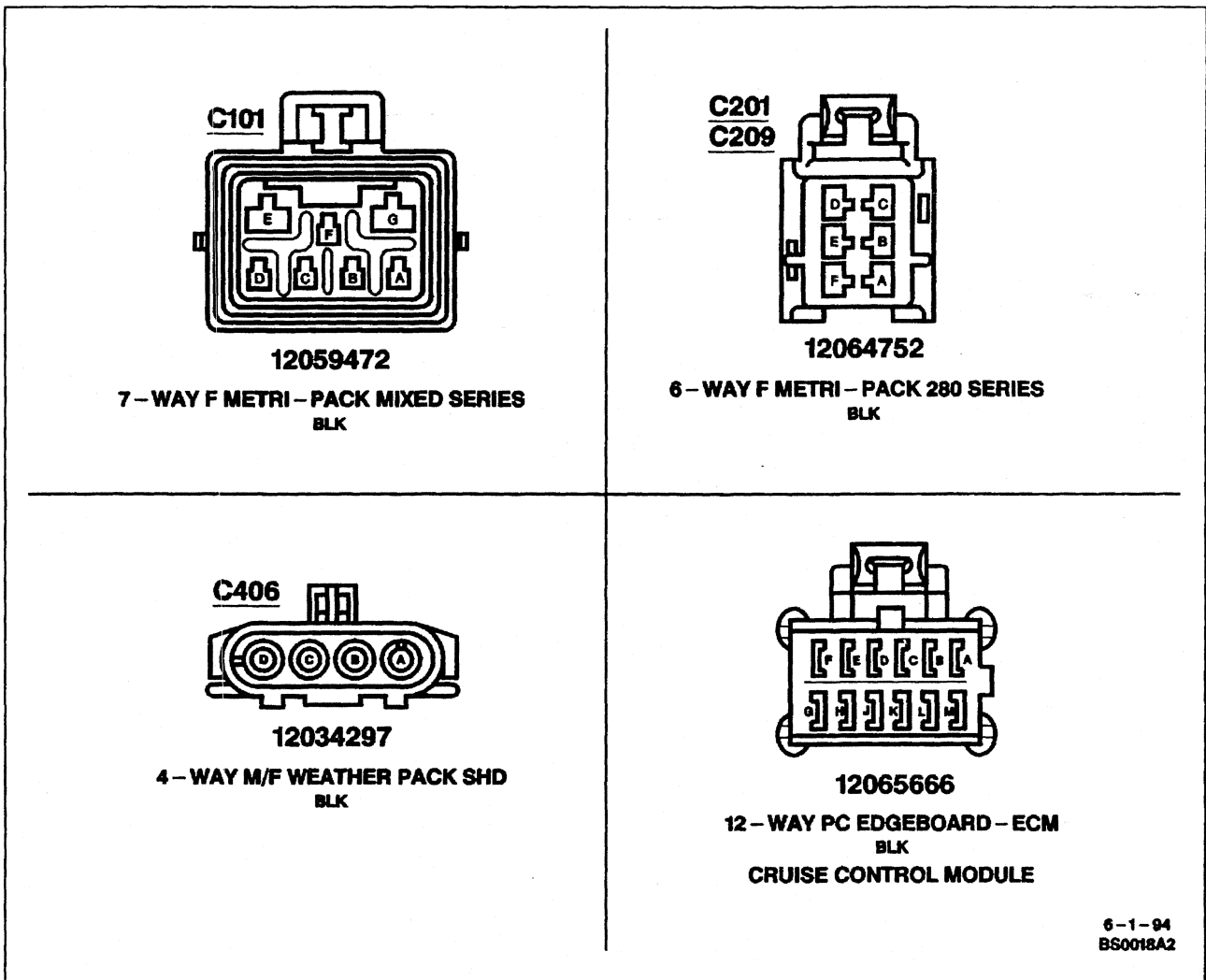
view of the connector face may be found. Connectors with 3 cavities or less are not included in SECTION 8A-202, "Harness Connector Faces."

Grounds are listed next in the table. The location description for G101 reads, "Behind LH Composite Headlamp." You are directed to page 8A-201-8, Figure 14.

Nearly every component, connector, ground or splice shown on a schematic can be pinpointed visually by using the Component Location View figures.

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center.....	Under RH side of I/P	1	4	
Fuse Block	Behind I/P Compartment Door	0	2	
CONNECTORS				
C100 (34 cavities)	Mounted to LH Hood Hinge	7	11	202-0
C210 (15 cavities)	Above Convenience Center, behind I/P Compartment.....	18	23	202-2
GROUND				
G101	Behind LH Composite Headlamp	8	14	
SPLICES				
S139.....	Forward Lamp Wiring Harn, behind RH Composite Headlamp	8	15	
S212.....	I/P Wiring Harn, behind I/P, above Steering Column	6	8	

Figure 2—Typical Entries in the Component Location List



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Figure 3—Typical Harness Connector Faces

HARNESS CONNECTOR FACES

The connectors (see Figure 3) are labeled with the component they are connected to, or the connector number. In addition the color of the connector is given along with the family/series name.

If you need to backprobe a connector while it is on the component (refer to page 8A-4-3 for probing procedures),

the order of the terminals must be mentally reversed. The wire color is a help in this situation. If there is more than one wire of the same color, you may need to locate a test point from its terminal number. A useful trick is to imagine that you are probing a terminal from behind the page you are looking at. Then mentally locate that terminal with respect to the keyway or other reference mark.

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OTHER INFORMATION

VIN REFERENCES

If schematics for more than one variation of an engine type—V6, for example—are shown, then the schematics will be labeled with VIN designation to distinguish the variations.

SERVICE PARTS IDENTIFICATION LABEL

To aid service and parts personnel in identifying options and parts originally installed, a Service Parts Identification Label has been placed in the vehicle. See SECTION 0A for the location of the label and the definition of the option codes.

ABBREVIATIONS

A/C	Air Conditioning
CCM	Central Control Module
CKT	Circuit
CONN	Connector
EBCM	Electronic Brake Control Module
EBTCM	Electronic Brake and Traction Control Module
ECM	Engine Control Module
HARN	Harness
I/P	Instrument Panel
LH	Left Hand
PCM	Powertrain Control Module

RH Right Hand

TERM Terminal

For a list of additional abbreviations, refer to SECTION 0A.

POWER DISTRIBUTION

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

The Power Distribution schematic refers to Fuse Block Details or the appropriate section schematics. By using these schematics, power distribution wiring can be followed from the Battery and Generator to the first component after a Fusible Link, Fuse or Light Switch. The ability to follow the power distribution wiring to the first component in each circuit is extremely helpful in locating short circuits which cause fusible links and fuses to open.

Figure 4 is a sample Power Distribution schematic. It shows how voltage is applied from the positive battery terminal to the various circuits on the vehicle. For example, battery voltage is applied to the Starter Solenoid, Fusible Link D, Fuses 1 and 2 in the Fuse Block and the Light Switch in the LH Pod. These fuses are said to be Hot At All Times, since battery voltage is always applied to them.

Notice that battery voltage is also applied to Fusible Link F and Coolant Fan Relay.

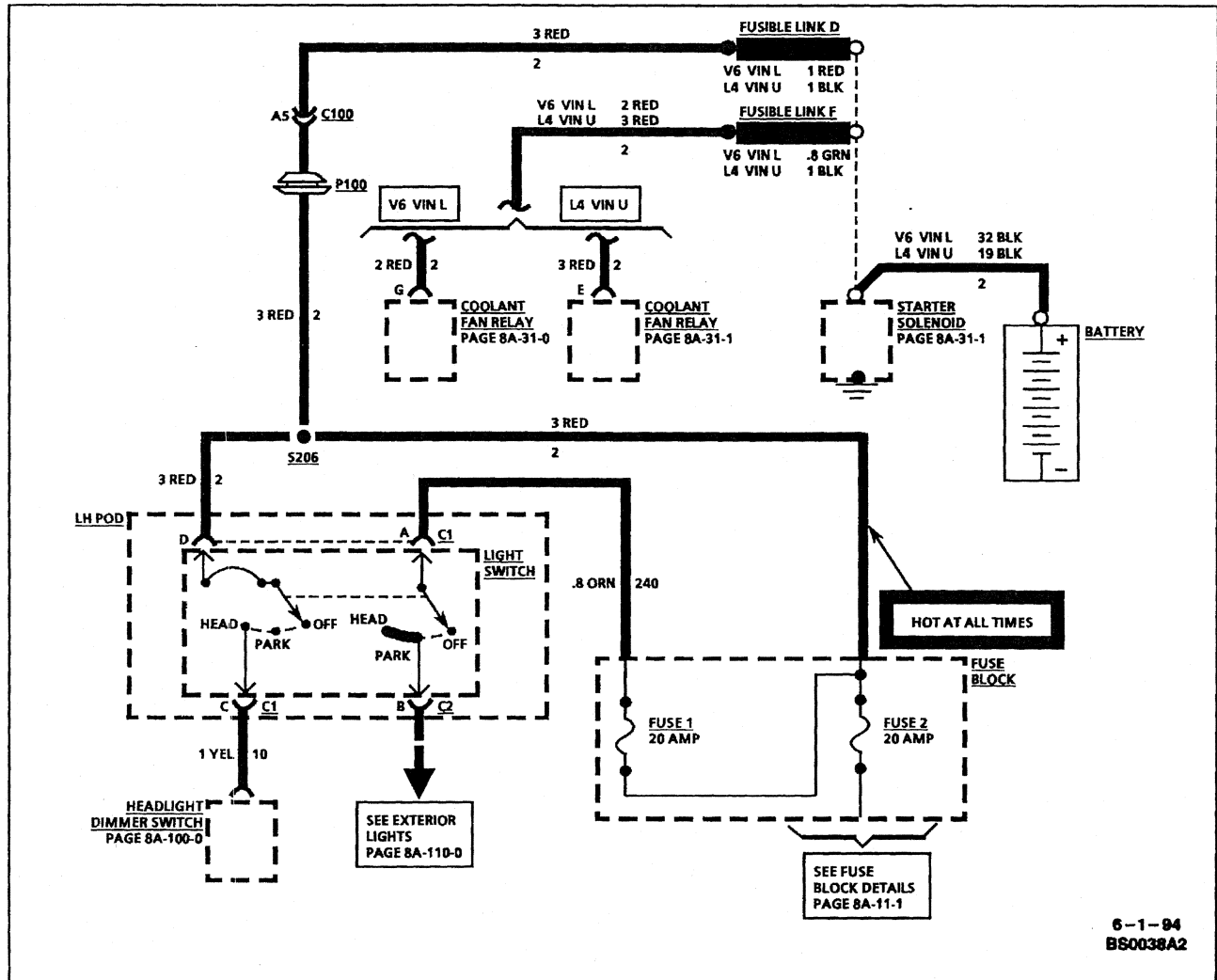


Figure 4—Typical Power Distribution Schematic

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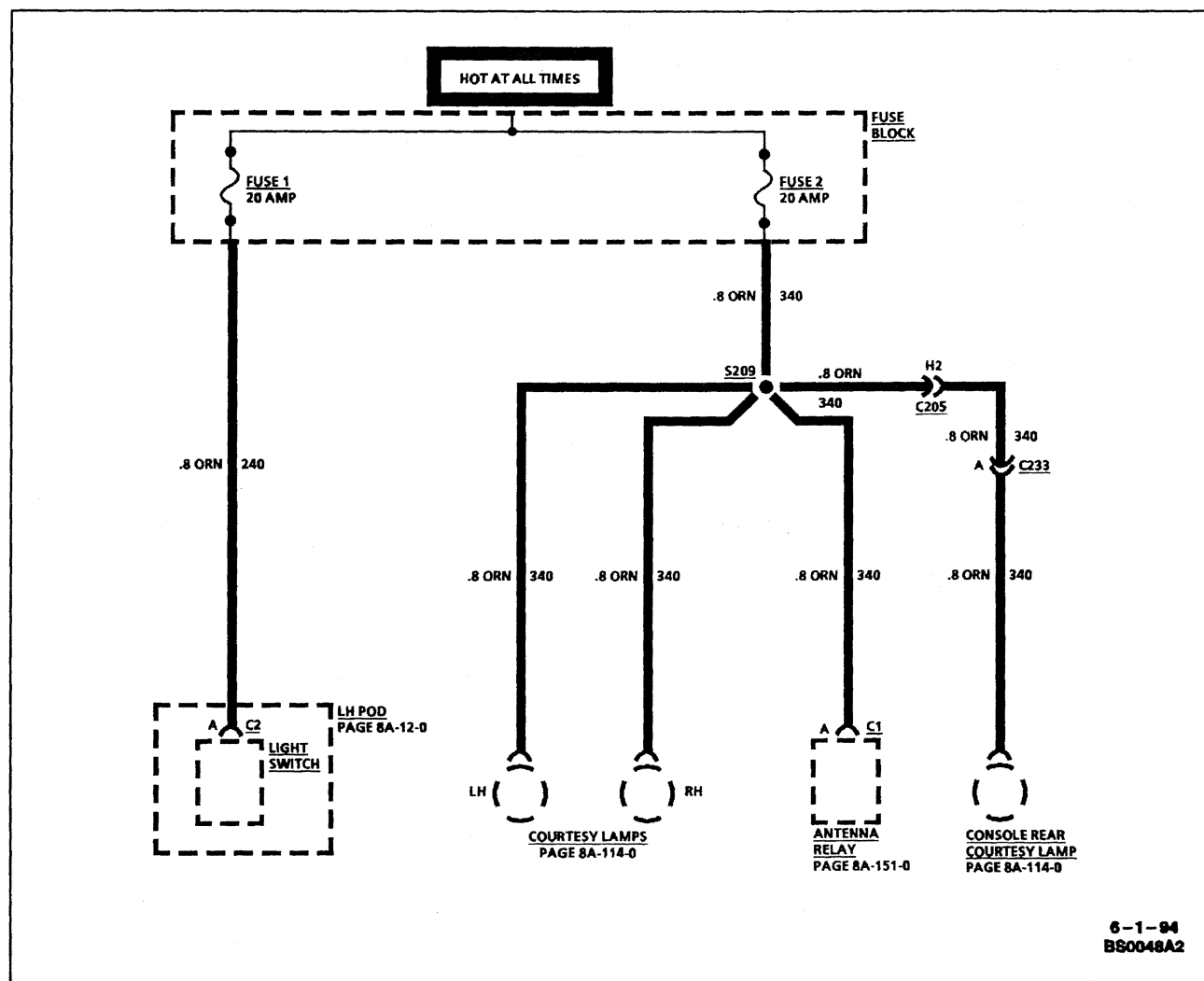


Figure 5—Typical Fuse Block Details Schematic

FUSE BLOCK DETAILS

The Fuse Block Details schematic (see Figure 5) shows all of the wiring between a fuse and the components connected to the fuse. The Fuse Block Details schematic is extremely helpful in locating a short circuit that causes a fuse to open.

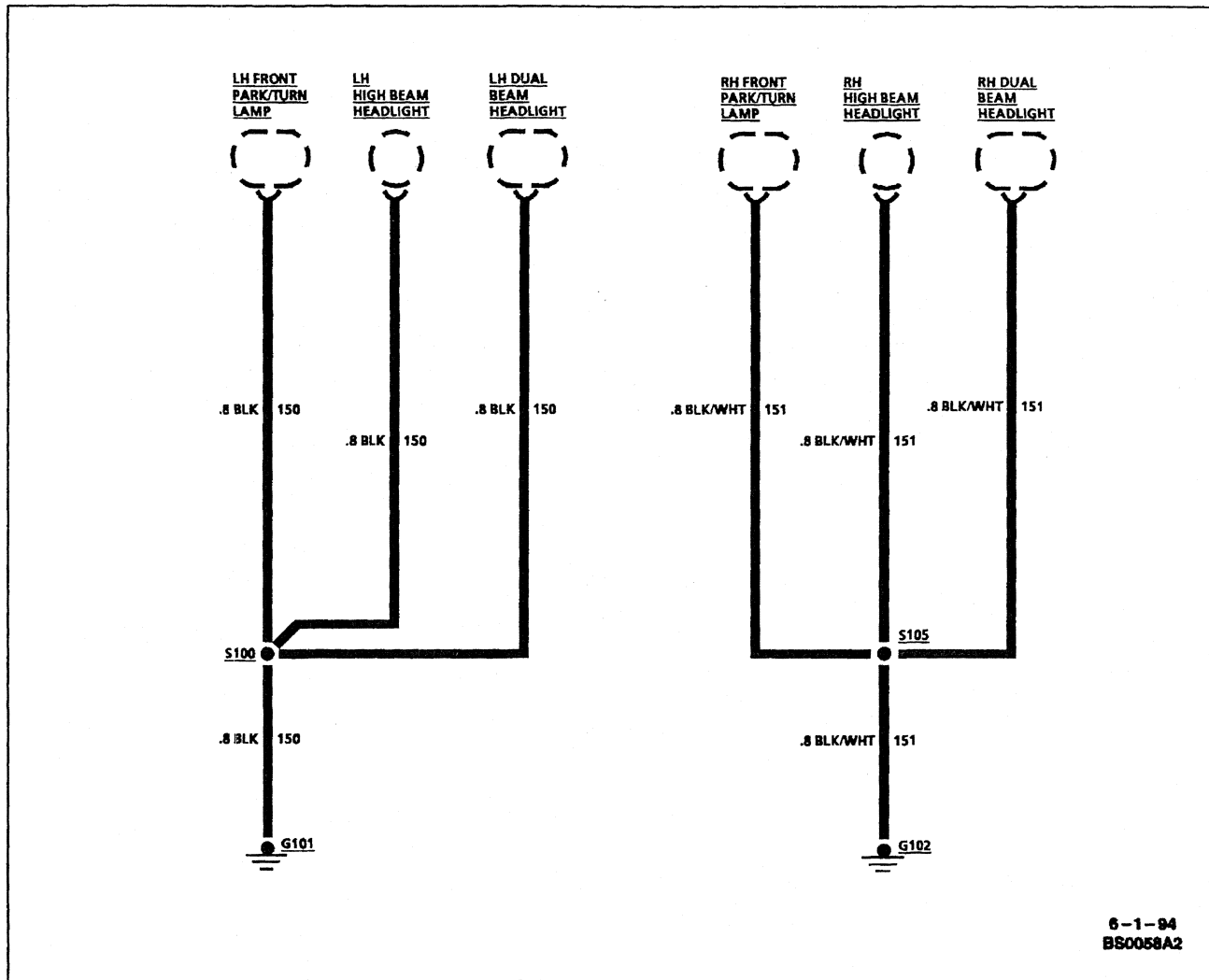


Figure 6—Typical Ground Distribution Schematic

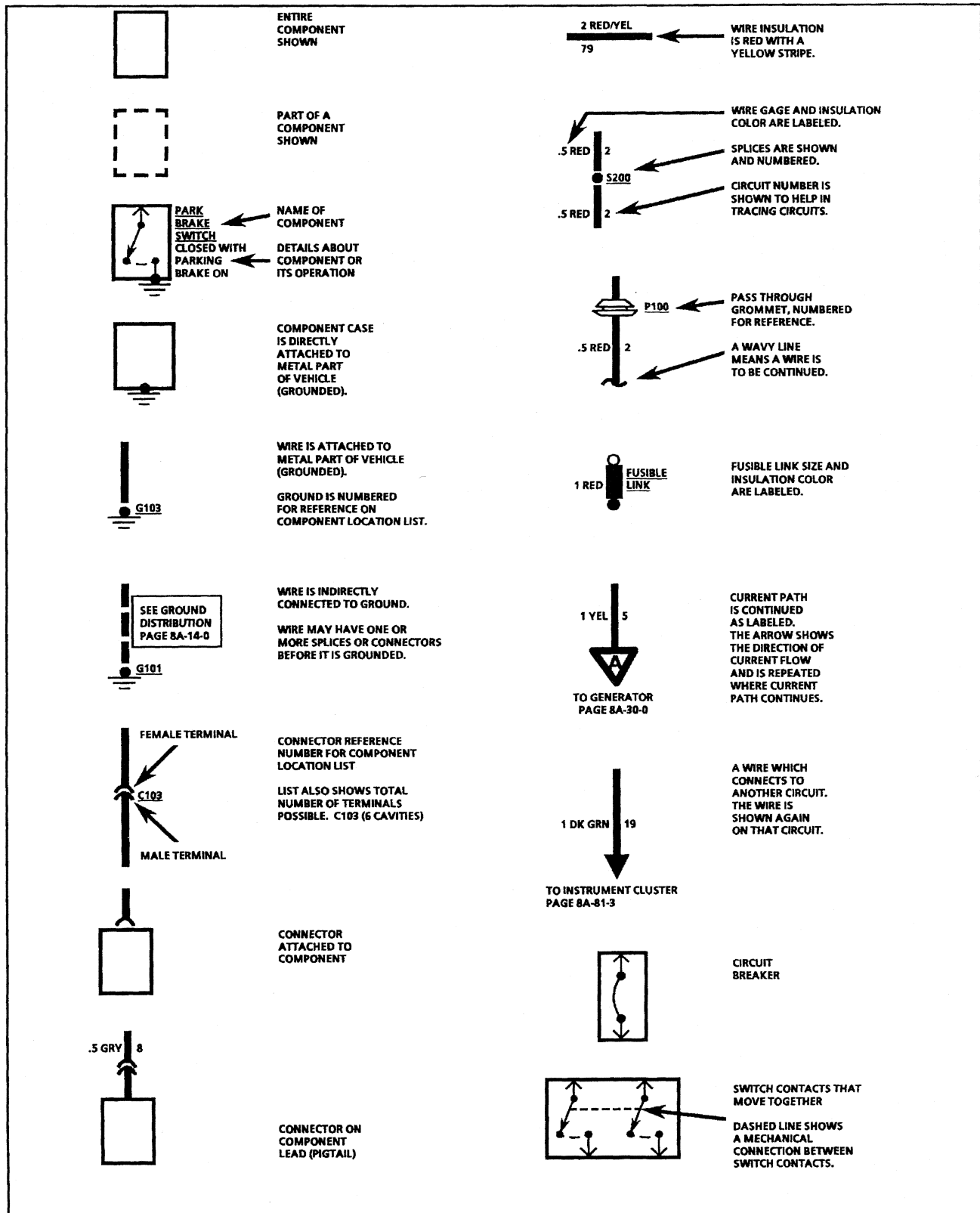
GROUND DISTRIBUTION

Figure 6 is a sample Ground Distribution schematic for the Headlamps. It shows exactly which components share each ground. This information can often be a time-saver when troubleshooting ground circuits.

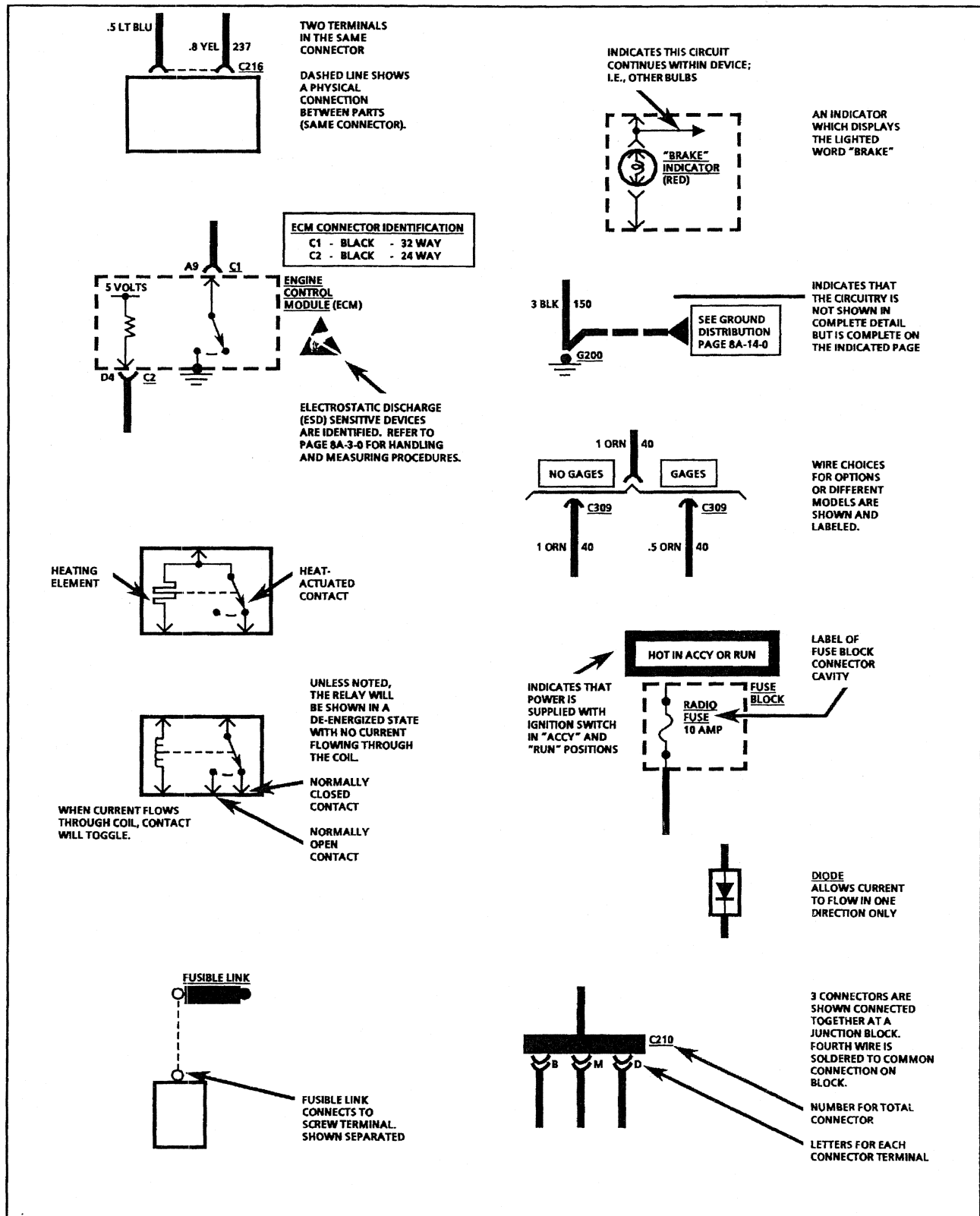
For example, if both Headlamps and the Park/Turn Lamp on one side are out, suspect an open in their

common ground wire or the ground connection itself. On the other hand, if one of the lamps work, the ground and the wire up to the splice are good. You have learned this just by inspecting the schematic and knowing the vehicle's symptoms. No actual work on the lighting system was needed.

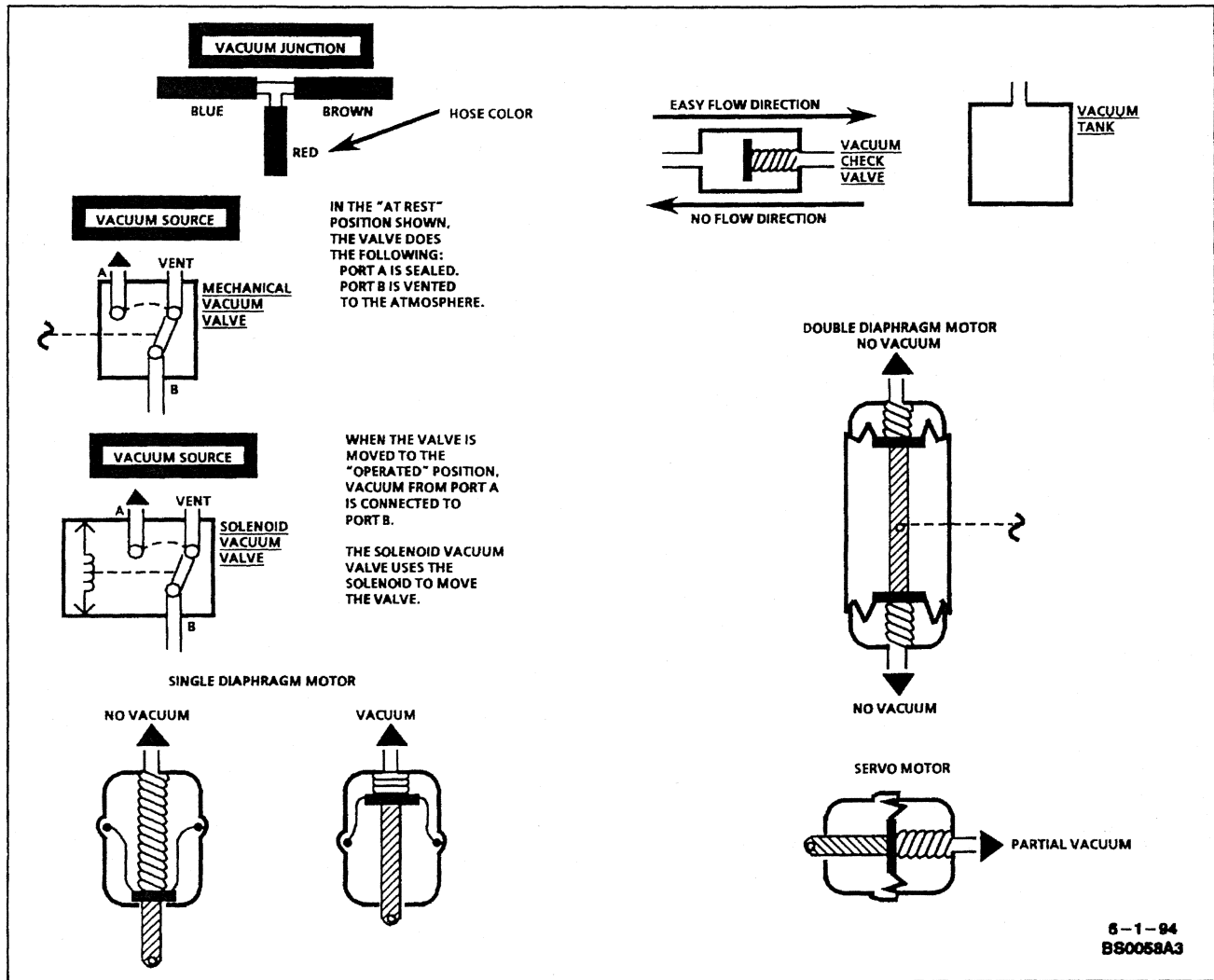
SYMBOLS



SYMBOLS



SYMBOLS



SYMBOLS

Vacuum Motors operate like electrical solenoids, mechanically pushing or pulling a shaft between two fixed positions. When vacuum is applied, the shaft is pulled in. When no vacuum is applied, the shaft is pushed all the way out by a spring.

Double Diaphragm Motors can be operated by vacuum in two directions. When there is no vacuum, the motor is in the center "at rest" position.

Some Vacuum Motors such as the Servo Motor in the Cruise Control can position the actuating arm at any position between fully extended and fully retracted. The servo is operated by a control valve that applies varying amounts of vacuum to the motor. The higher the vacuum level, the greater the retraction of the motor arm. Servo Motors work like the two position motors; the only difference is in the way the vacuum is applied. Servo Motors are generally larger and provide a calibrated control.

SYMBOLS

ELECTROSTATIC DISCHARGE (ESD) AND SUPPLEMENTAL INFLATABLE RESTRAINT (SIR)

ELECTROSTATIC DISCHARGE (ESD) SENSITIVE DEVICES

All ESD sensitive components are Solid State and the following information applies to them.

The ESD symbol (Figure 1) is used on schematics (Figure 2) to indicate which components are ESD sensitive. When handling any electronic part, the service technician should follow the guidelines below to reduce any possible electrostatic charge build-up on the service technician's body and inadvertent discharge to the electronic part. If it is not known whether or not a component is ESD sensitive, assume it is susceptible.

HANDLING PROCEDURES

1. Always touch a known good ground before handling the part. This should be repeated while handling the part and more frequently after sliding across a seat, sitting down from a standing position or walking a distance.
2. Avoid touching electrical terminals of the part, unless so instructed by a written diagnostic procedure.
3. When using a voltmeter, be sure to connect the ground lead first.
4. Do not remove a part from its protective package until it is time to install the part.
5. Before removing the part from its package, ground the package to a known good ground on the vehicle.

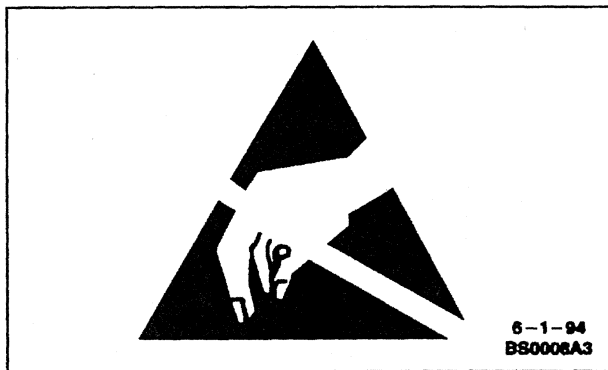


Figure 1 - ESD Symbol

MEASURING PROCEDURES

The circuits shown within the boxes are greatly simplified. Do not troubleshoot by measuring resistance at any terminal of these devices unless so instructed by a written diagnostic procedure. Due to the simplification of the schematics, resistance measurements could be misleading, or could lead to electrostatic discharge.

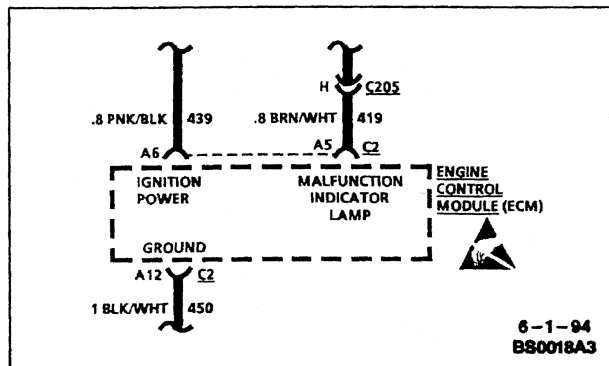


Figure 2 - Typical Schematic

SUPPLEMENTAL INFLATABLE RESTRAINT (SIR) SYSTEM: IF EQUIPPED

The SIR symbol (Figure 3) is used on schematics to alert the technician to the following important caution:

CAUTION: This vehicle is equipped with Supplemental Inflatable Restraint (SIR). Refer to CAUTIONS in SECTION 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in SECTION 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

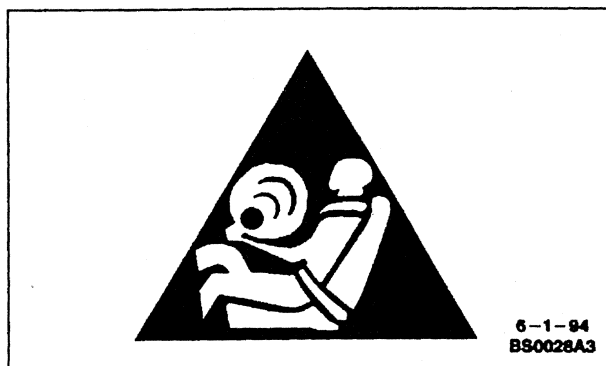


Figure 3 - SIR Symbol

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TROUBLESHOOTING PROCEDURES

BASIC KNOWLEDGE REQUIRED

Without a basic knowledge of electricity, it will be difficult to use the diagnostic procedures contained in this section. You should understand the basic theory of electricity and know the meaning of voltage, current (amps) and resistance (ohms). You should understand what happens in a circuit with an open or a shorted wire. You should be able to read and understand a wiring diagram.

The following four-step troubleshooting procedure is recommended:

Step 1: Check the Problem

Perform a System Check to determine a symptom. Don't waste time fixing part of the problem! Do not begin disassembly or testing until you have narrowed down the possible causes.

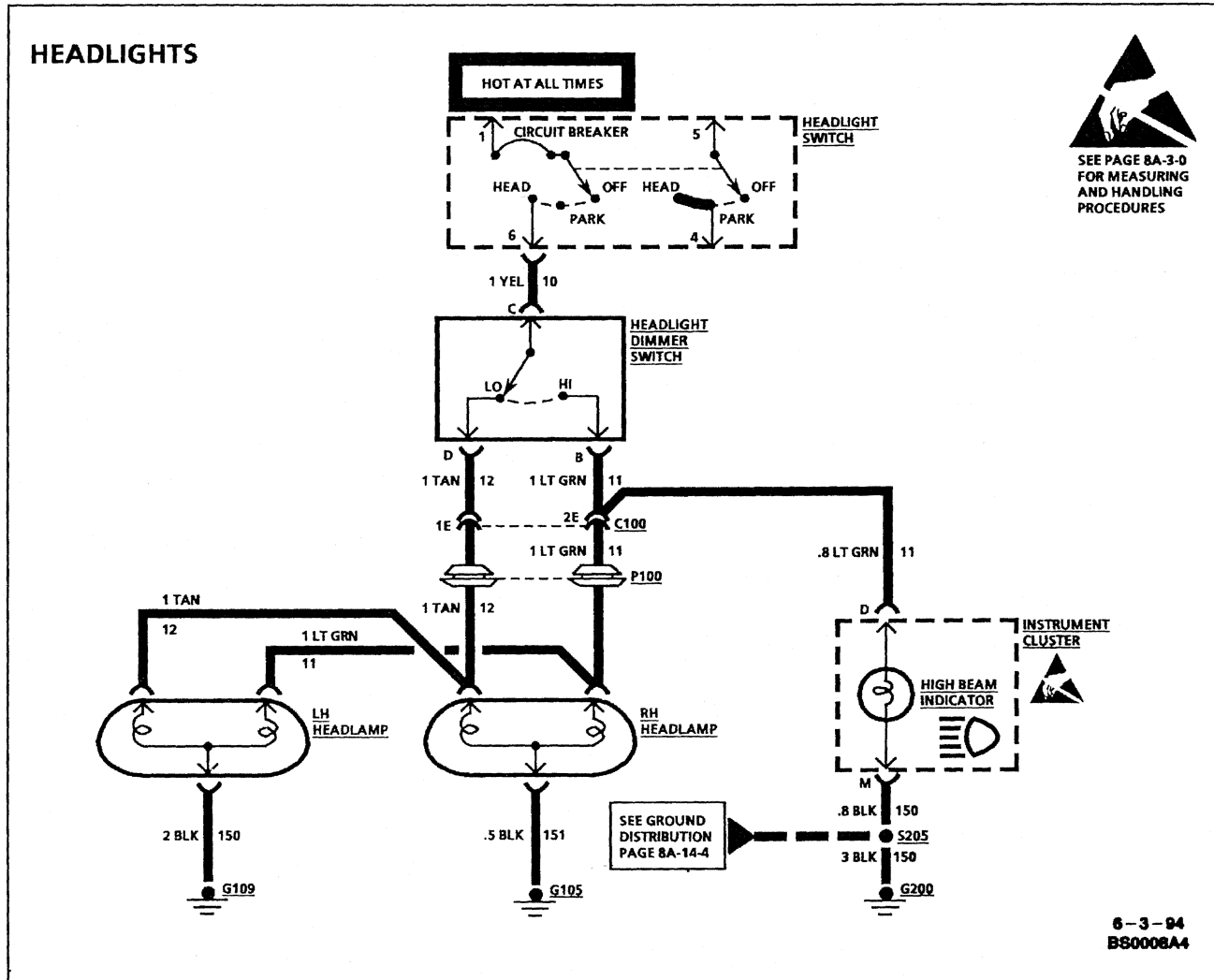


Figure 1—Typical Headlights Schematic

Step 2: Read the Electrical Schematic

Study the schematic. Read the Circuit Operation text if you do not understand how the circuit should work. Check circuits that share wiring with the problem circuit. (Shared circuits are shown on Power Distribution, Ground Distribution, Fuse Block Details and Light Switch Details pages.) Try to operate the shared circuits. If the shared circuits work, then the shared wiring is OK. The cause must be within the wiring used only by the problem circuit.

If several circuits fail at the same time, chances are the power (fuse) or ground circuit is faulty.

Step 3: Find the fault and repair

- Narrow down the possible causes.
- Use the Troubleshooting Hints.
- Make the necessary measurements or checks as given in the System Diagnosis.

- Before replacing a component, check power, signal and ground wires at the component harness connector. If the checks and connections are OK, the most probable cause is component failure.

Step 4: Test the Repair

Repeat the System Check to verify that the fault has been corrected and that no other faults were induced during the repair.

Example:

A customer brings in a vehicle and says that the HI beams do not work.

Step 1: Perform a System Check on the Headlight Circuit

You may discover that both LO beams operate. In "HI," you may notice that the HI Beam Indicator comes on, but neither HI beam operates.

Step 2: Read the Headlights Electrical Schematic (Figure 1).

This is the step that will save time and labor. Remember, it is essential to understand how a circuit should work, before trying to figure out why it doesn't.

After you understand how the circuit should operate, read the schematic again, this time keeping in mind what you have learned by operating the circuit.

Since both LO beams work, you know that the Headlight Switch, the YEL wire, the LO contacts of the Headlight Dimmer Switch, terminal "1E" of C100, the TAN wires and grounds G105 and G109 are all good.

Furthermore, since you saw that the HI Beam Indicator came on when the Headlight Dimmer Switch was moved to "HI," you know that the HI contacts of the Headlight Dimmer Switch and the LT GRN wire between the Headlight Dimmer Switch and C100 are good.

At this point, you could test for voltage at the RH Headlamp with the Headlight Dimmer Switch in "HI." However, it is extremely unlikely that the HI beam filaments have burned out in both headlamps, or that both headlamps connections are bad. The cause must be a bad connection at C100, or a break in the LT GRN wire between C100 and the RH Headlamp.

You have quickly narrowed the possible causes down to one specific area, and have *done* absolutely *no* work on the vehicle itself.

Step 3: Find the fault and repair it.

Using the Component Location List and the corresponding figure, you can quickly find C100 and the LT GRN wire, locate the exact trouble point and make the repair.

Step 4: Check the repair by performing a System Check on the Headlights Circuit.

This, of course, means making sure that both HI beams, both LO beams and the HI Beam Indicator are all working.

Now suppose that the symptoms were different. You may have operated the Headlamps and found that the LO beams were working, but neither the HI beams nor the HI Beam Indicator were working. Looking at the schematic, you might conclude that it is unlikely that both HI beam filaments and the HI Beam Indicator have all burned out at once. The cause is probably the Headlight Dimmer Switch or its connector.

TROUBLESHOOTING TOOLS

Electrical troubleshooting requires the use of common electrical test equipment.

TEST LIGHT/DIGITAL VOLTMETER

Use a test light to check for voltage. A Test Light (J 34142-B) is made up of a 12 volt light bulb with a pair of leads attached. After grounding one lead, touch the other lead to various points along the circuit where voltage should be present. When the bulb goes on, there is voltage at the point being tested.

A DVM can be used instead of a test light. While a test light shows whether or not voltage is present, a DVM indicates how much voltage is present.

An increasing number of circuits include solid state control modules. One example is the Engine Control Module (ECM). Voltages in these circuits should be tested only with a 10-megohm or higher impedance DVM or multimeter (J 39200). Unless directed to within the diagnostics, never use a test light on circuits that contain solid state components, since damage to these components may result.

When testing for voltage or continuity at the connection, it is not necessary to separate the two halves of the connector. Unless testing a Weather Pack® connector, always probe the connector from the back. Always check both sides of the connector. An accumulation of dirt and corrosion between contact surfaces is sometimes a cause of electrical problems. A terminal contact checking procedure can be found on page 8A-4-6.

CONNECTOR TEST ADAPTERS

Connector Test Adapter Kit (J 35616-A) is available for making tests and measurements at separated connectors. This kit contains an assortment of probes which mate with many of the types of terminals you will see. Avoid using paper clips and other substitutes since they can damage terminals and cause incorrect measurements.

TROUBLESHOOTING PROCEDURES

SELF-POWERED TEST LIGHT

A self-powered test light (J 21008-A) can be used to check for continuity. This tool is made up of a light bulb, Battery and two leads. If the leads are touched together, the bulb will go on.

A self-powered test light is used only on an unpowered circuit. First remove the fuse which feeds the circuit you're working on. Select two specific points along the circuit through which there should be continuity. Connect one lead of the self-powered test light to each point. If there is continuity, the test light circuit will be completed and the bulb will go on.

Never use a self-powered test light on circuits that contain solid state components, since damage to these components may result.

OHMMETER

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

Circuits which include any solid state control modules, such as the Engine Control Module (ECM), should be tested only with a 10-megohm or higher impedance digital multimeter (J 39200).

When measuring resistance with a DVM, the vehicle Battery should be disconnected. This will prevent incorrect readings. DVMs apply such a small voltage to measure resistance that the presence of voltages can upset a resistance reading.

Diodes and solid state components in a circuit can cause an ohmmeter to give a false reading. To find out if a component is affecting a measurement, take a reading once, reverse the leads and take a second reading. If the readings differ, the solid state component is affecting the measurement.

FUSED JUMPER WIRE

A fused jumper (J 36169) is available with small clamp connectors providing adaptation to most connectors without damage. This fused jumper wire is supplied with a 20 amp fuse which may not be suitable for some circuits. Do not use a fuse with a higher rating than the fuse that protects the circuit being tested.

NOTICE: A fused jumper may not protect solid state components from being damaged.

SHORT FINDER

Short Finders (J 8681-A) are available to locate hidden shorts to ground. The short finder creates a pulsing

magnetic field in the shorted circuit and shows you the location of the short through body trim or sheet metal.

FUSE TESTER

A simple tester (J 34764) can detect a blown fuse. To check a fuse, the tester is applied directly to the fuse in the Fuse Block. Two probes contact the fuse, either into the slots of a flat fuse or to the metal ends of a glass fuse. With power on, a red LED in the tester lights if the fuse is open. The handle of the tester is a tool for removing either type of fuse.

TROUBLESHOOTING TESTS

Always check for aftermarket accessories (non-OEM) as the first step in diagnosing electrical problems. If the vehicle is so equipped, disconnect the system to verify that these add-on accessories are not the cause of the problems.

Some possible causes of vehicle problems related to aftermarket accessories include:

1. Power feeds connected to points other than the Battery.
2. Antenna location.
3. Transceiver wiring located too close to vehicle electronic modules or wiring.
4. Poor shielding or poor connectors on antenna feed line.

Refer to 1990/1991 model year bulletin entitled, "Installation Guidelines for Aftermarket Accessories" for specific information.

PROBING

After probing, when reconnecting connectors or replacing terminals, always be sure to reinstall Connector Position Assurance (CPA) and Terminal Position Assurance (TPA).

Frontprobe

When frontprobing of connectors is required, always use a mating terminal adapter from Connector Test Adapter Kit (J 35616-A). The use of proper adapters will ensure that proper terminal contact integrity is maintained. For a terminal contact checking procedure, refer to page 8A-4-6.

Backprobe

Only backprobe connector terminals when specifically called for in diagnostic procedures. Since backprobing can be a source of damage to connector terminals, extra care must be taken to avoid deforming the terminal, either by forcing the test probe too far into the cavity or by using too large a test probe.

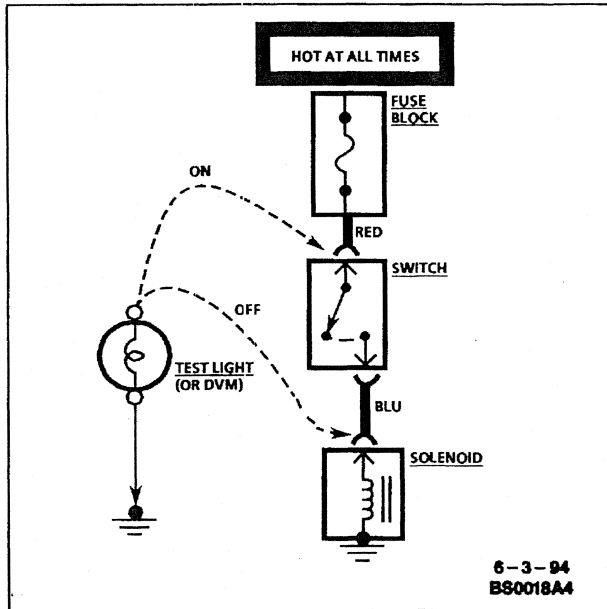


Figure 2—Voltage Check

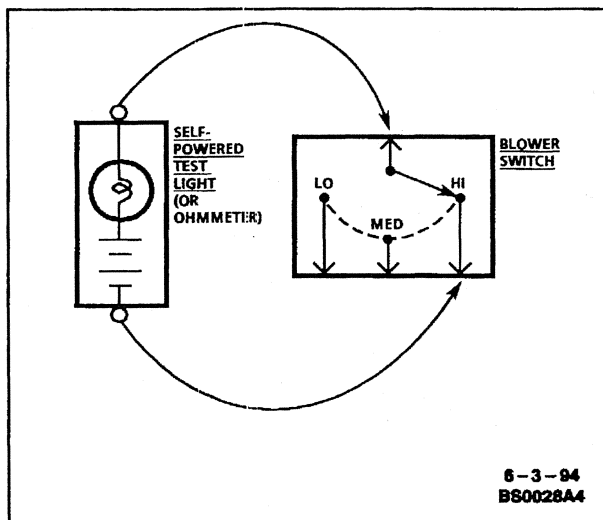


Figure 3—Continuity Check through a Switch

After backprobing any connector, always check for terminal damage. If terminal damage is suspected, check for proper terminal contact (refer to "Checking Terminal Contact," page 8A-4-6).

TESTING FOR VOLTAGE (Figure 2)

1. Connect one lead of a test light to a known good ground. When using a DVM, be sure the voltmeter's negative lead is connected to ground.
2. Connect the other lead of the test light or voltmeter to a selected test point (connector or terminal).
3. If the test light illuminates, there is voltage present. When using a DVM, note the voltage reading.

TESTING FOR CONTINUITY (Figure 3)

1. Remove the fuse to the circuit involved.
2. Connect one lead of a self-powered test light or ohmmeter to one end of the part of the circuit you wish to test.
3. Connect the other lead to the other end of the circuit.
4. If the self-powered test light glows, there is continuity. When using an ohmmeter, low or no resistance means good continuity.

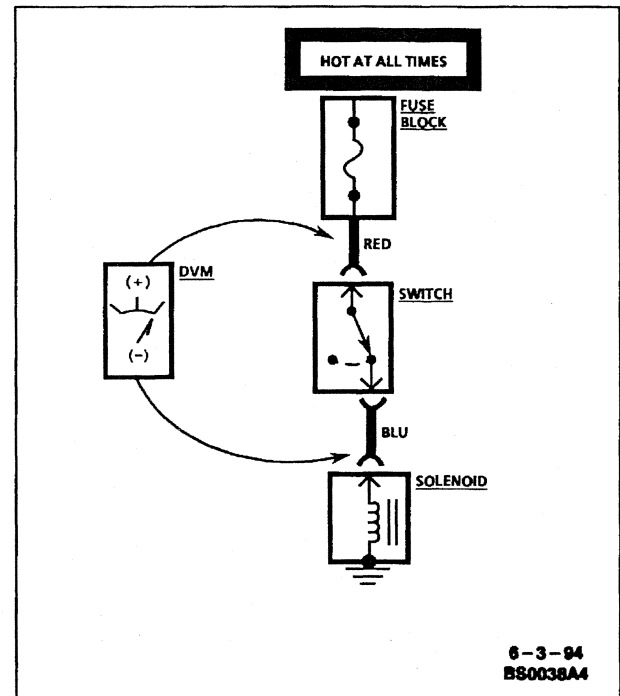


Figure 4—Voltage Drop Test

TESTING FOR VOLTAGE DROP (Figure 4)

This test checks for voltage being lost along a wire, or through a connection or switch.

1. Connect the positive lead of a DVM to the end of the wire (or to one side of the connection or switch) which is closer to the Battery.
2. Connect the negative lead to the other end of the wire (or the other side of the connection or switch).
3. Operate the circuit.
4. The DVM will show the difference in voltage between the two points.

TROUBLESHOOTING PROCEDURES

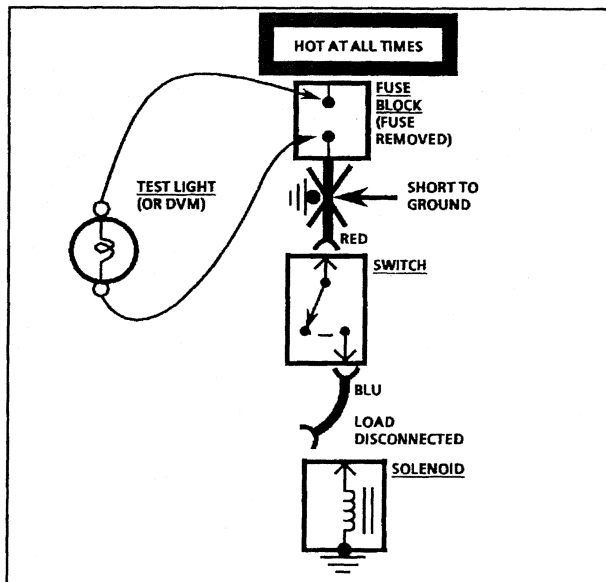


Figure 5 - Testing for Short with Test Light or DVM

TESTING FOR SHORT TO GROUND

With a Test Light or DVM (Figure 5)

1. Remove the blown fuse and disconnect the load.
2. Connect a test light or voltmeter across the fuse terminals (be sure that the fuse is powered).
3. Beginning near the Fuse Block, wiggle the harness from side to side. Continue this at convenient points (about 6 inches apart) while watching the test light or DVM.
4. When the test light glows, or the DVM registers, there is a short to ground in the wiring near that point.

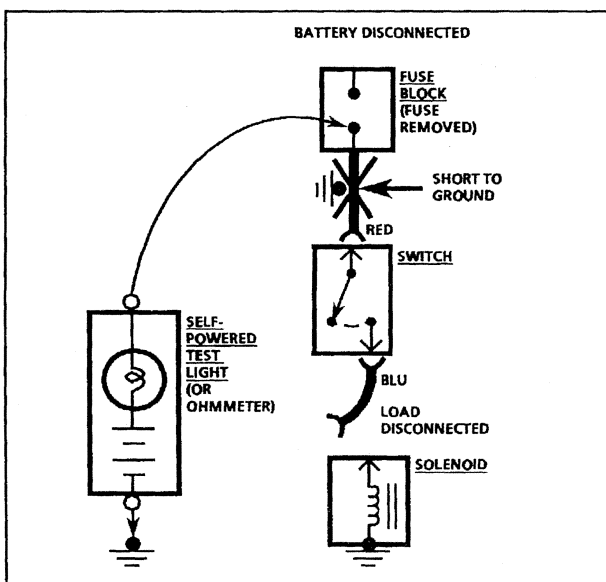


Figure 6—Test for Short wSelf-Powered Test Light or Ohmmeter

With a Self-Powered Test Light or Ohmmeter (Figure 6)

1. Remove the blown fuse and disconnect the Battery and load.
2. Connect one lead of a self-powered test light or ohmmeter to the fuse terminal on the load side.
3. Connect the other lead to a known good ground.
4. Beginning near the Fuse Block, wiggle the harness from side to side. Continue this at convenient points (about 6 inches apart) while watching the self-powered test light or ohmmeter.
5. When the self-powered test light glows, or the ohmmeter registers, there is a short to ground in the wiring near that point.

Fuses Powering Several Loads

1. Find the schematic in "Fuse Block Details," page 8A-11-0, for the fuse that has blown.
2. Open the first connector or switch leading from the fuse to each load.
3. Replace the fuse.
 - If the fuse blows, the short is in the wiring leading to the first connector or switch. Use a test light or meter as described on previous page.
 - If fuse does not blow, refer to next step.
4. Close each connector or switch until the fuse blows in order to find which circuit has the short. Connect test lamp or meter at the connector to the suspect circuit (disconnected) rather than at the fuse terminals.

JUMP STARTING PROCEDURE

Refer to SECTION 6D-1 for jump starting procedure.

INTERMITTENT AND POOR CONNECTIONS

Most intermittents are caused by faulty electrical connections or wiring, although occasionally a sticking relay or solenoid can be a problem. Some items to check are:

- Poor mating of connector halves, or terminals not fully seated in the connector body (backed out).
- Dirt or corrosion on the terminals. The terminals must be clean and free of any foreign material which could impede proper terminal contact.
- Damaged connector body, exposing the terminals to moisture and dirt, as well as not maintaining proper terminal orientation with the component or mating connector.

- Improperly formed or damaged terminals. All connector terminals in problem circuits should be checked carefully to ensure good contact tension. Use a corresponding mating terminal to check for proper tension. Refer to "Checking Terminal Contact" in this section for the specific procedure.
- The J 35616-A Connector Test Adapter Kit must be used whenever a diagnostic procedure requests checking or probing a terminal. Using the adapter will ensure that no damage to the terminal will occur, as well as giving an idea of whether contact tension is sufficient. If contact tension seems incorrect, refer to "Checking Terminal Contact" in this section for specifics.
- Poor terminal-to-wire connection. Some conditions which fall under this description are poor crimps, poor solder joints, crimping over wire insulation rather than the wire itself, corrosion in the wire-to-terminal contact area, etc.
- Wire insulation which is rubbed through, causing an intermittent short as the bare area touches other wiring or parts of the vehicle.
- Wiring broken inside the insulation. This condition could cause a continuity check to show a good circuit, but if only 1 or 2 strands of a multi-strand type wire are intact, resistance could be far too high.

To avoid any of the above problems when making wiring or terminal repairs, always follow the instructions for wiring and terminal repair outlined in SECTION 8A-5.

CHECKING TERMINAL CONTACT

When diagnosing an electrical system that utilizes Metri-Pack 150/280/480/630 series terminals (refer to Terminal Repair Kit, J 38125-A, instruction manual, J 38125-4 for terminal identification), it is important to check terminal contact between a connector and component, or between in-line connectors, before replacing a suspect component.

Frequently, a diagnostic chart leads to a step that reads: "Check for poor connection." Mating terminals must be inspected to assure good terminal contact. A poor connection between the male and female terminal at a connector may be the result of contamination or deformation.

Contamination is caused by the connector halves being improperly connected, a missing or damaged connector seal, or damage to the connector itself, exposing the terminals to moisture and dirt. Contamination, usually in underhood or underbody connectors, leads to terminal corrosion, causing an open circuit or intermittently open circuit.

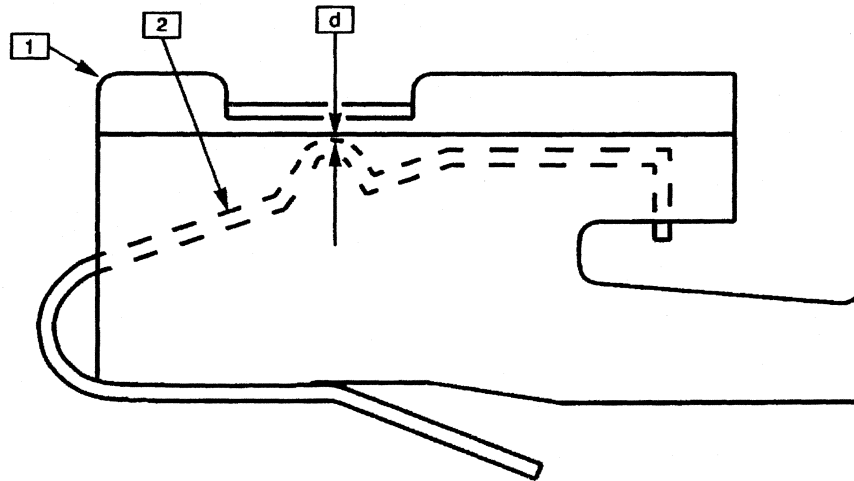
Deformation is caused by probing the mating side of a connector terminal without the proper adapter, improperly joining the connector halves or repeatedly separating and joining the connector halves. Deformation, usually to the female terminal contact tang, can result in poor terminal contact (see Figure 7), causing an open or intermittently open circuit.

Follow the procedure below to check terminal contact.

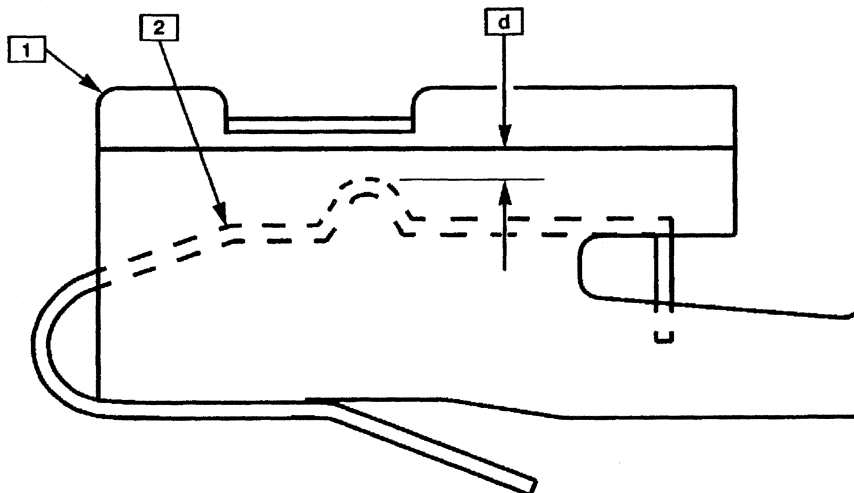
1. Separate the connector halves. Refer to Terminal Repair Kit, J 38125-A, instruction manual, J 38125-4.
2. Inspect the connector halves for contamination. Contamination will result in a white or green build-up within the connector body or between terminals, causing high terminal resistance, intermittent contact or an open circuit. An underhood or underbody connector that shows signs of contamination should be replaced in its entirety: terminals, seals and connector body.
3. Using an equivalent male terminal from the Terminal Repair Kit, J 38125-A, check the retention force of the female terminal in question by inserting and removing the male terminal to the female terminal in the connector body. Good terminal contact will require a certain amount of force to separate the terminals.
4. Using an equivalent female terminal from the Terminal Repair Kit, J 38125-A, compare the retention force of this terminal to the female terminal in question by joining and separating the male terminal to the good female terminal, and then joining and separating the male terminal to the female terminal in question. If the retention force is significantly different between the two female terminals, replace the female terminal in question (refer to Terminal Repair Kit, J 38125-A).

If a visual (physical) check does not reveal the cause of the problem, the vehicle may be able to be driven with a DVM connected to the suspected circuit. An abnormal voltage reading when the problem occurs indicates the problem may be in that circuit.

TROUBLESHOOTING PROCEDURES



d ABOUT EQUAL TO 0, GOOD TERMINAL CONTACT



d MUCH GREATER THAN 0, POOR TERMINAL CONTACT

- 1 TYPICAL METRI-PACK 150/280/480/630 SERIES FEMALE TERMINAL
(150 SERIES PUSH-TO-SEAT SHOWN)
- 2 CONTACT TANG
- d AMOUNT OF DEFORMATION

Figure 7 - Deformation of a Typical Metri-Pack 150/280/480/630 Series Female Terminal

DETECTING ELECTRICAL INTERMITTENTS

Use the following procedure to detect intermittent terminal contact or a broken wire with an intermittent connection inside the insulation.

The J 39200 Digital Multimeter has the ability to monitor current, resistance, or voltage while recording the minimum (MIN) and maximum (MAX) values measured. The meter can also be set to display the average (AVG) value measured.

When diagnosing circuits that have voltage applied, use the voltage setting to monitor a connector (or length of a circuit) which is suspected of having an intermittent connection but is currently operating normally.

1. Connect the J 39200 Digital Multimeter to both sides of a suspect connector (still connected) or from one end of a suspect circuit to the other. This will continuously monitor the terminal contacts or length of wire being checked. See "Meter Connections" for examples of the various methods for connecting the meter to the circuit.
2. Set the meter for voltage. Since the "MIN MAX" mode does not use auto ranging, manually select the voltage range necessary before proceeding.
3. Press the "MIN MAX" button. The meter should read "100 ms RECORD" (100 millisecond record) and emit a 1/4 second beep. The meter is now ready to record and will generate an audible tone for any change in voltage. At this point, you may wish to press the "PEAK MIN MAX" button, which will record any voltage variations that occur for at least 1 millisecond.
4. Try to simulate the condition that is potentially causing an intermittent connection, either by wiggling connections or wiring, test driving or performing other operations. If an open or resistance is created, a voltage will be present and the meter will emit a tone for as long as the open or resistance exists. Any change in voltage will cause the meter to emit a tone for no less than 1/4 second. (Listening for a tone while manipulating wiring is very helpful for narrowing down an intermittent connection.)

Use the MIN and MAX values when the meter is out of sight or sound range, in noisy areas or for test driving when it may not be possible to monitor the meter.

To check the MIN and MAX recorded voltages press "MIN MAX" once for MAX and twice for MIN. A variation between MIN and MAX recorded voltages (unless nearly 0 volts) suggests an intermittent open or that resistance exists and should be repaired as necessary. Refer to SECTION 8A-5 of any current GM Service Manual for approved repair procedures.



Important:

- The "100 ms RECORD" (100 millisecond record) mode is NOT the amount of time allowed to perform a specific procedure. It is the amount of time used to record each snapshot of information used for calculating "AVG" when in the "MIN MAX" mode.

METER CONNECTIONS

The previous diagnostic procedure was written to detect intermittents using the meter set to voltage. Whether using the current, voltage or resistance setting to detect intermittents, it is necessary to connect the meter to the circuit.

Following are examples of the various methods of connecting the meter to the circuit to be checked:

- Backprobe both ends of the connector and either hold the leads in place while manipulating the connector or tape the leads to the harness for continuous monitoring while performing other operations or test driving. (Do not backprobe "Weather Pack®" type connectors.)
- Disconnect the harness at both ends of the suspect circuit where it connects either to a component or to other harnesses.
- Use Connector Test Adapter Kit J 35616-A to connect the meter to the circuit.
- If the system being diagnosed has a specified pinout or breakout box, it may be used to simplify connecting the meter to the circuit or for checking multiple circuits quickly.

ADDITIONAL INFORMATION

NOTICE: Turn off power to the test circuit before attempting in-circuit resistance measurements to prevent false readings or damage to the meter. Do not use the meter to measure resistance through a solid state module.

Continuity tests that work well for detecting intermittent shorts to ground can be performed by setting the meter to "ohms" then pressing the "PEAK MIN MAX" button. An audible tone will be heard whenever the meter detects continuity for at least 1 millisecond.

The J 39200 Instruction Manual is a good source of information and should be read thoroughly upon receipt of the meter as well as kept on hand for reference during new procedures.

REPAIR PROCEDURES

ELECTRICAL REPAIRS

This section provides instruction in the following repairs:

- Circuit Protection
- Typical Electrical Repairs
- Splicing Copper Wire
- Splicing Twisted/Shielded Cable
- Repairing Connectors (Except Weather Pack®)
- Repairing Weather Pack® (Environmental) Connectors
- Terminal Repair

After any electrical repair is made, always test the circuit afterwards by operating the devices in the circuit. This confirms not only that the repair is correct but, also, that it was the cause of the complaint.

CIRCUIT PROTECTION

The purpose of circuit protection is to protect the wiring assembly during normal and overload conditions. An overload is defined as a current requirement that is higher than normal. This overload could be caused by a short circuit or system malfunction. The short circuit could be the result of a pinched or cut wire or an internal device short circuit, such as an electronic module failure.

The circuit protection device is only applied to protect the wiring assembly, and not the electrical load at the end of the assembly. For example, if an electronic component short circuits, the circuit protection device will assure a minimal amount of damage to the wiring assembly. However, it will not necessarily prevent damage to the component.

CIRCUIT PROTECTION DEVICES

There are three basic types of circuit protection devices: Circuit Breaker, Fuse and Fusible Link.

CIRCUIT BREAKERS

A circuit breaker is a protective device designed to open the circuit when a current load is in excess of rated breaker capacity. If there is a short or other type of overload condition in the circuit, the excessive current will open the circuit between the circuit breaker terminals. There are two basic types of circuit breakers used in GM vehicles: cycling and non-cycling.

CYCLING CIRCUIT BREAKER

The cycling breaker will open due to heat generated when excessive current passes through it for a period of time. Once the circuit breaker cools, it will close again after a few seconds. If the cause of the high current is still present it will open again. It will continue to cycle open and closed until the condition causing the high current is removed.

NON-CYCLING CIRCUIT BREAKER

There are two types of non-cycling circuit breakers. One type is mechanical and is nearly the same as a cycling breaker. The difference is a small heater wire within the non-cycling circuit breaker. This wire provides enough heat to keep the bimetallic element open until the current source is removed.

The other type is solid state, called out in this section as Electronic Circuit Breaker (ECB). This device has a Positive Temperature Coefficient. It increases its resistance greatly when excessive current passes through it. The excessive current heats the ECB. As it heats, its resistance increases, therefore having a Positive Temperature Coefficient. Eventually the resistance gets so high that the circuit is effectively open. The ECB will not reset until the circuit is opened, removing voltage from its terminals. Once voltage is removed, the circuit breaker will re-close within a second or two.

FUSES

The most common method of automotive wiring circuit protection is the fuse (Figure 1). A fuse is a device that, by the melting of its element, opens an electrical circuit when the current exceeds a given level for a sufficient time. The

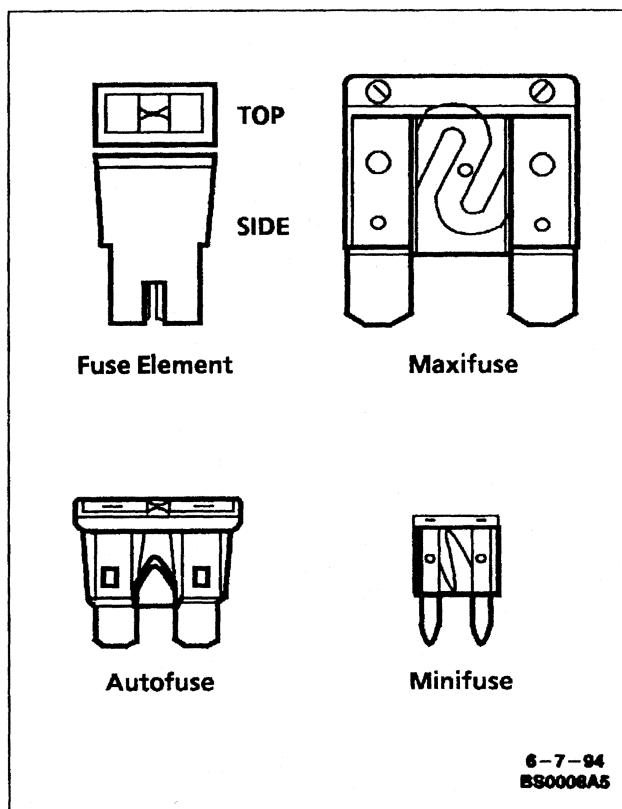


Figure 1 - Fuse Devices

AUTOFUSE	
CURRENT RATING	COLOR
3	VIOLET
5	TAN
7.5	BROWN
10	RED
15	BLUE
20	YELLOW
25	NATURAL
30	GREEN

MAXIFUSE	
CURRENT RATING	COLOR
20	YELLOW
30	GREEN
40	AMBER
50	RED
60	BLUE
70	BROWN
80	NATURAL

MINIFUSE	
CURRENT RATING	COLOR
5	TAN
7.5	BROWN
10	RED
15	BLUE
20	YELLOW
25	NATURAL
30	GREEN

PACIFIC FUSE ELEMENT	
CURRENT RATING	COLOR
30	PINK
40	GREEN
50	RED
60	YELLOW

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Figure 2 - Fuse Rating and Color

action is non-reversible and the fuse must be replaced each time a circuit is overloaded or after a malfunction is repaired.

Fuses are color coded. The standardized color identification and ratings are shown in Figure 2. For service replacement, non-color coded fuses of the same respective current rating can be used.

Examine a suspect fuse for a break in the element. If the element is broken or melted, replace the fuse with one of equal current rating.

There are additional specific circuits with in-line fuses. These fuses are located within the individual wiring harness and will appear to be an open circuit if blown.

AUTOFUSE

The Autofuse, normally referred to simply as "Fuse," is the most common circuit protection device in today's vehicle. The Autofuse is most often used to protect the wiring assembly between the Fuse Block and the system components.

MAXIFUSE

The Maxifuse was designed to replace the fusible link and Pacific Fuse elements. The Maxifuse is designed to protect cables, normally between the battery and fuse block, from both direct short circuits and resistive short circuits.

Compared to a fusible link or a Pacific Fuse element, the Maxifuse performs much more like an Autofuse, although the average opening time is slightly longer. This is because the Maxifuse was designed to be a slower blowing fuse, with less chance of nuisance blows.

MINIFUSE

The Minifuse is a smaller version of the Autofuse and has a similar performance. As with the Autofuse, the Minifuse is usually used to protect the wiring assembly between a fuse block and system components. Since the Minifuse is a smaller device, it allows for more system specific fusing to be accomplished within the same amount of space as Autofuses.

PACIFIC FUSE ELEMENT/MAXIFUSE

The Pacific Fuse Element and Maxifuse were developed to be a replacement for the fusible link. Like a fusible link, the fuses are designed to protect wiring from a direct short to ground. These elements are easier to service and inspect than a fusible link and will eventually replace fusible links in all future vehicle applications.

REPAIR PROCEDURES

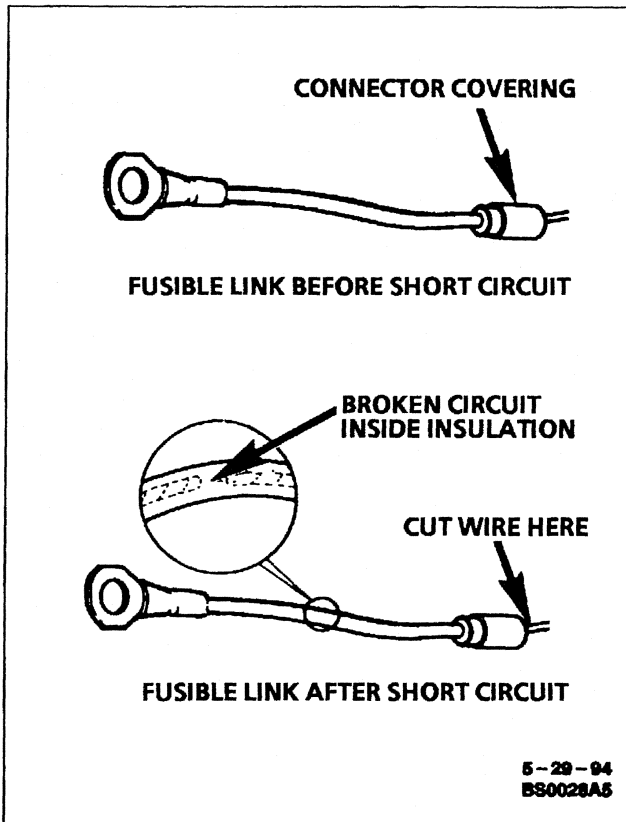


Figure 3 - Good and Damaged Fusible Links

FUSIBLE LINKS

In addition to circuit breakers and fuses, some circuits use fusible links to protect the wiring. Like fuses, fusible links are "one-time" protection devices that will melt and create an open circuit (see Figure 3).

Not all fusible link open circuits can be detected by observation. Always inspect that there is battery voltage past the fusible link to verify continuity.

Fusible links are used instead of a fuse in wiring circuits that are not normally fused, such as the ignition circuit. For AWG sizes, each fusible link is four wire gage sizes smaller than the wire it is designed to protect. For example: to protect a 10 gage wire use a 14 gage link or for metric, to protect a 5 mm² wire use a 2 mm² link (see Figure 6). Links are marked on the insulation with wire-gage size because the heavy insulation makes the link appear to be a heavier gage than it actually is. The same wire size fusible link must be used when replacing a blown fusible link.

Fusible links are available with three types of insulation: Hypalon®, Silicone/GXL (SIL/GXL) and Expanded Duty. All future vehicles that use fusible links will utilize the Expanded Duty type of fusible link. When servicing fusible links, all fusible links can be replaced

with the Expanded Duty type. SIL/GXL fusible links can be used to replace either SIL/GXL or Hypalon® fusible links. Hypalon® fusible links can only be used to replace Hypalon® fusible links.

Determining characteristics of the types of fusible links are:

- Hypalon® (limited use): only available in .35 mm² or smaller and its insulation is one color all the way through.
- SIL/GXL (widely used): available in all sizes and has a white inner core under the outer color of insulation.
- Expanded Duty: available in all sizes, has an insulation that is one color all the way through and has three dots following the writing on the insulation.

Service fusible links are available in many lengths. Choose the shortest length that is suitable. If the fusible link is to be cut from a spool, it should be cut 150-225 mm (approx. 6-9 in.) long. NEVER make a fusible link longer than 225 mm (approx. 9 in.).

CAUTION: Fusible links cut longer than 225 mm (approx. 9 in.) will not provide sufficient overload protection.

To replace a damaged fusible link (Figure 4), cut it off beyond the splice. Replace with a repair link. When

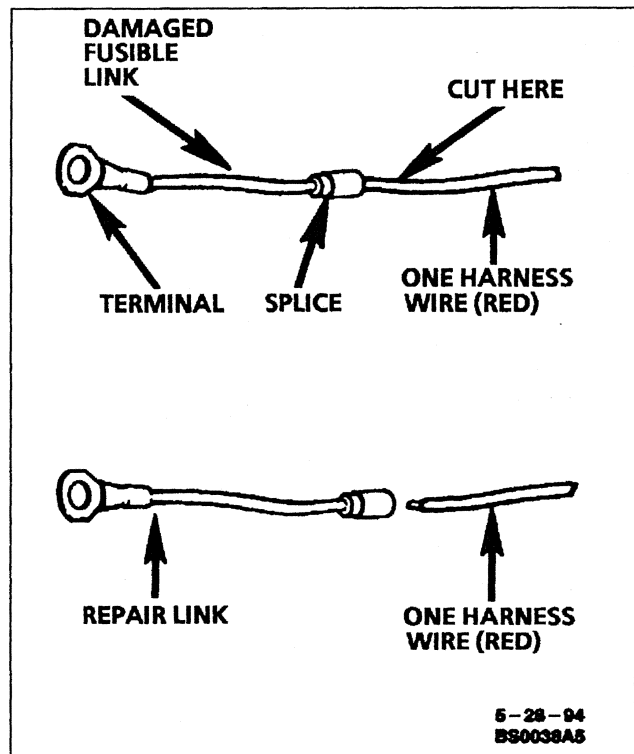


Figure 4 - Single Wire Feed Fusible Link

connecting the repair link, strip wire and use staking-type pliers to crimp the splice securely in two places. For more details on splicing procedures, see "Splicing Copper Wire." Use crimp and seal splices whenever possible. When using splice clips, refer to page 8A-5-3; when using crimp and seal splice sleeves, refer to page 8A-5-6.

To replace a damaged fusible link which feeds two harness wires, cut them both off beyond the splice. Use two repair links, one spliced to each harness wire (see Figure 5).

TYPICAL ELECTRICAL REPAIRS

An open circuit is an incomplete circuit. Power cannot reach the load or reach ground. If a circuit is open, active components do not energize. A short circuit is an unwanted connection between one part of the circuit and either ground or another part of the circuit. A short circuit causes a fuse to blow or a circuit breaker to open.

SHORT CIRCUITS CAUSED BY DAMAGED WIRE INSULATION

- Locate the damaged wire.
- Find and correct the cause of the wire insulation damage.
- For minor damage, tape over the wire. If damage is more extensive, replace the faulty segment of the wire (refer to the splicing instructions for copper or shielded cable for the correct splicing procedure).

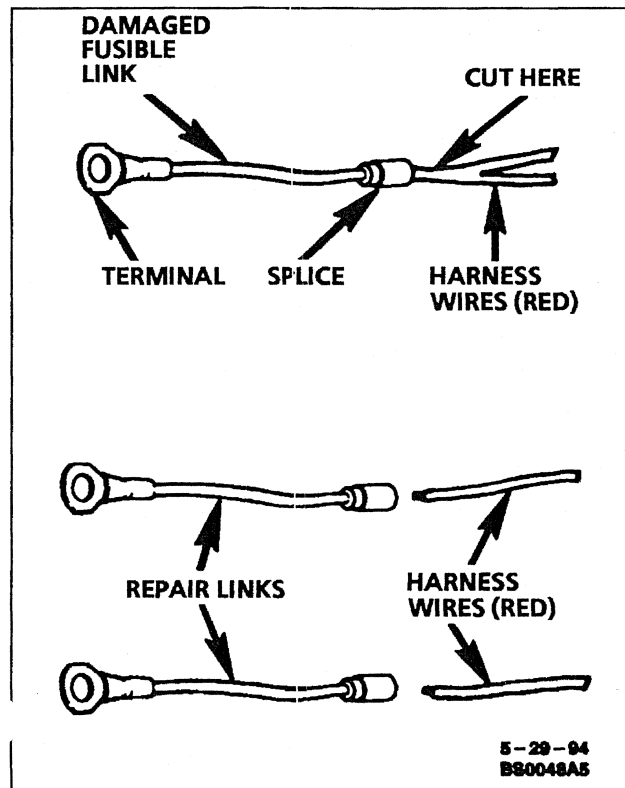


Figure 5 - Double Wire Feed Fusible Link

SPlicing COPPER WIRE USING SPLICE CLIPS

Splice clips are included in the J 38125-A Terminal Repair Kit. The splice clip is a general purpose wire repair device. It may not be acceptable for applications having special requirements such as moisture sealing. Refer to the appropriate Service Manual section to determine if there are any special requirements.

Step 1: Open the Harness

If the harness is taped, remove the tape. To avoid wire insulation damage, use a sewing "seam ripper" to cut open the harness (available from sewing supply stores). If the harness has a black plastic conduit, simply pull out the desired wire.

Step 2: Cut the Wire

Begin by cutting as little wire off the harness as possible. You may need the extra length of the wire later if you decide to cut more wire off to change the location of a splice. You may have to adjust splice locations to make certain that each splice is at least 40 mm (1.5 in.) away from other splices, harness branches or connectors.

Step 3: Strip the Insulation

When replacing a wire, use a wire of the same size as the original wire or larger. The schematics list wire size in metric units. The following table (Figure 6) shows the commercial (AWG) wire sizes that can be used to replace each metric wire size. Each AWG size is either equal to or larger than the equivalent metric size.

To find the correct wire size either find the wire on the schematic page and convert the metric size to the AWG size, or use an AWG wire gage.

If you aren't sure of the wire size, start with the largest opening in the wire stripper and work down until a clean strip of the insulation is removed. Be careful to avoid nicking or cutting any of the wires.

METRIC WIRE SIZES (mm ²)	AWG SIZES
.22	24
.35	22
.5	20
.8	18
1.0	16
2.0	14
3.0	12
5.0	10
8.0	8
13.0	6
19.0	4
32.0	2

Figure 6 - Wire Size Conversion Table

REPAIR PROCEDURES

Step 4: Crimp the Wires

Select the proper clip to secure the splice. To determine the proper clip size for the wire being spliced, follow the directions included in the J 38125-A Terminal Repair Kit. Select the correct anvil on the crimper. (On most crimpers your choice is limited to either a small or large anvil.) Overlap the stripped wire ends and hold them between your thumb and forefinger as shown in Figure 7. Then, center the splice clip under the stripped wires and hold it in place.

- Open the crimping tool to its full width and rest one handle on a firm flat surface.
- Center the back of the splice clip on the proper anvil and close the crimping tool to the point where the former touches the wings of the clip.
- Make sure that the clip and wires are still in the correct position. Then, apply steady pressure until the crimping tool closes (see Figure 8).

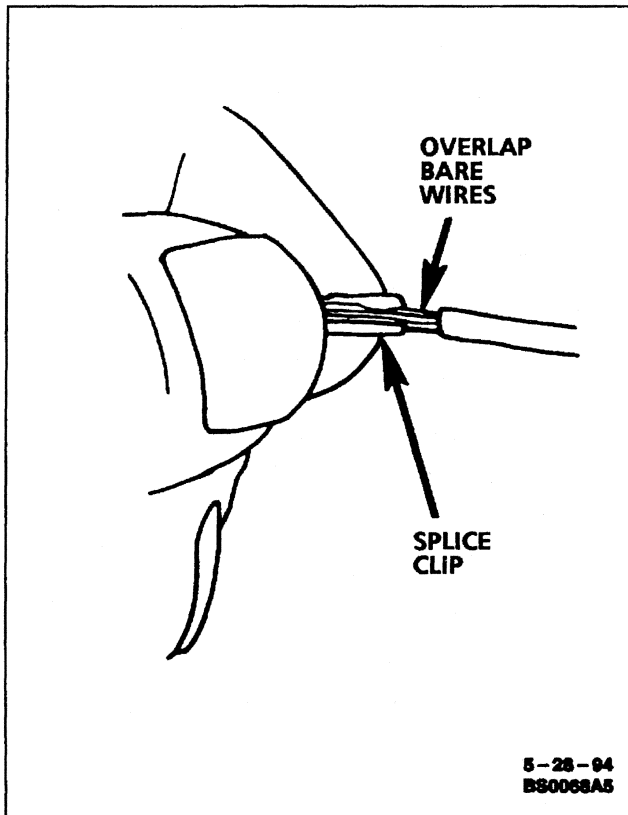


Figure 7 - Centering the Splice Clip

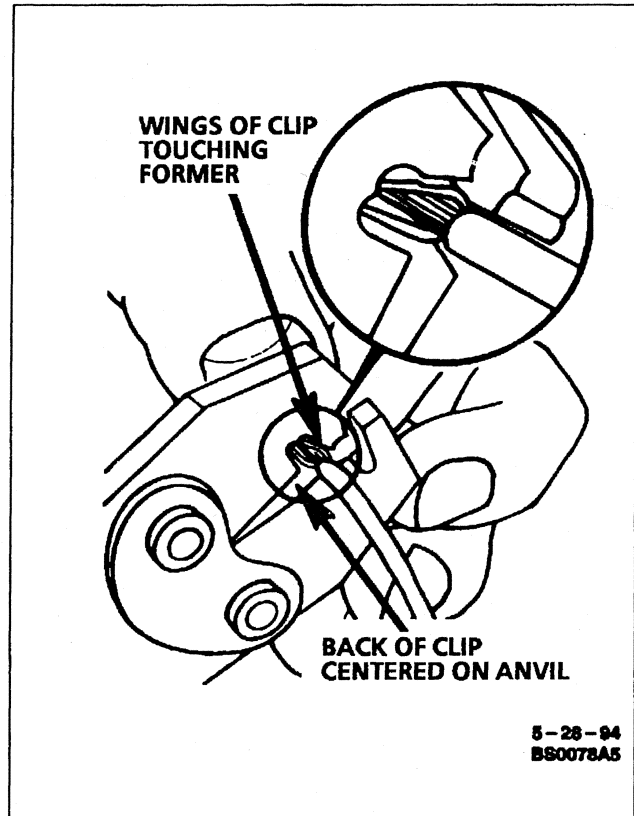


Figure 8 - Crimping the Splice Clip

- Before crimping the ends of the clip, be sure that:
 - The wires extend beyond the clip in each direction.
 - No strands of wire are cut loose.
 - No insulation is caught under the clip.

Crimp the splice again, once on each end. Do not let the crimping tool extend beyond the edge of the clip or you may damage or nick the wires (see Figure 9).

Step 5: Solder

Apply 60/40 rosin core solder to the opening in the back of the clip (see Figure 10). Follow the manufacturer's instruction for the solder equipment you are using.

Step 6: Tape the Splice

Center and roll the splicing tape. The tape should cover the entire splice. Roll on enough tape to duplicate the thickness of the insulation on the existing wires. Do not flag the tape. Flagged tape may not provide enough insulation, and the flagged ends will tangle with the other wires in the harness (see Figure 11).

If the wire does not belong in a conduit or other harness covering, tape the wire again. Use a winding motion to cover the first piece of tape (Figure 12).

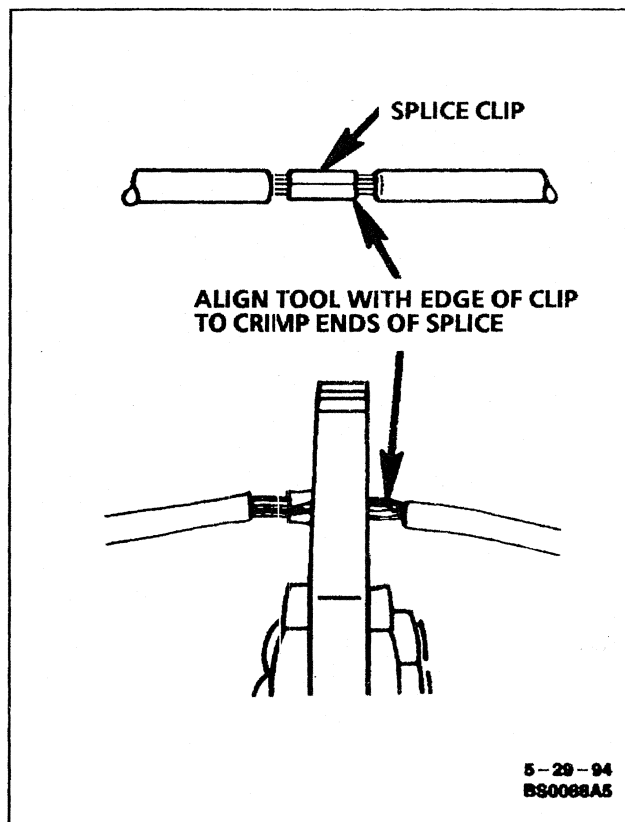


Figure 9 - Completing the Crimp

SPLICING COPPER WIRE USING CRIMP AND SEAL SPLICE SLEEVES

Crimp and seal splice sleeves may be used on all types of insulation except Tefzel and coaxial to form a one-to-one splice. They are to be used where there are special requirements such as moisture sealing. Refer to the appropriate section of the Service Manual to determine if the crimp and seal is necessary. Crimp and seal splice sleeves are included in the J 38125-A Terminal Repair Kit.

Step 1: Open the Harness

If the harness is taped, remove the tape. To avoid wire insulation damage, use a sewing "seam ripper" to cut open the harness (available from sewing supply stores). The crimp and seal splice sleeves may be used on all types of insulation except Tefzel and coaxial and may only be used to form a one-to-one splice.

Step 2: Cut the Wire

Begin by cutting as little wire off the harness as possible. You may need the extra length of wire later if you decide to cut more wire to change the location of a splice. You may have to adjust splice locations to make certain that each splice is at least 40 mm (1.5 in.) away from other splices, harness branches or connectors. This will help prevent moisture from bridging adjacent splices and causing damage.

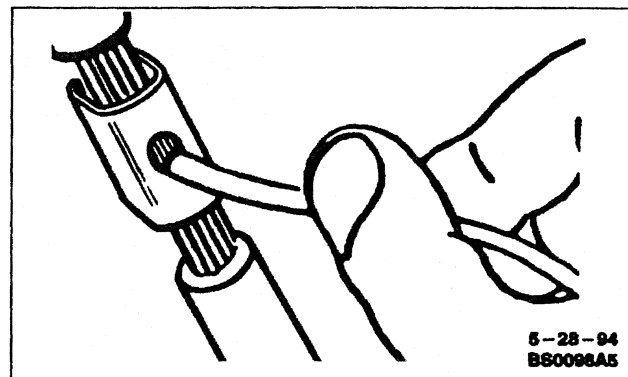


Figure 10 - Applying the Solder

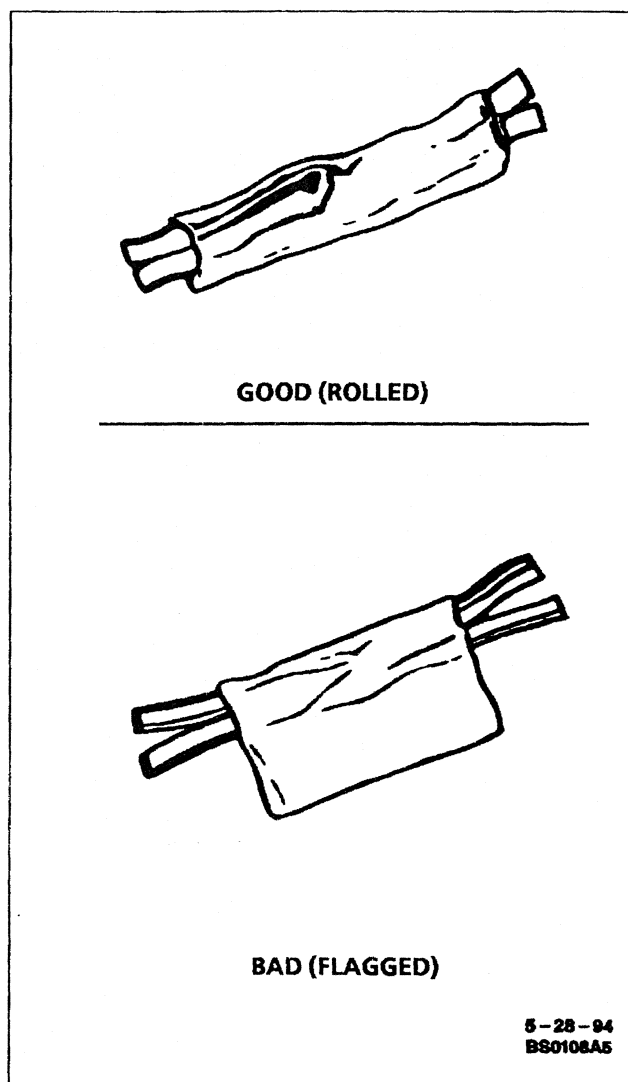


Figure 11 - Proper First Taping

Step 3: Strip the Insulation

If it is necessary to add a length of wire to the existing harness, be certain to use the same size as the original wire (refer to Figure 6, "Wire Size Conversion Table").

To find the correct wire size either find the wire on the schematic and convert the metric size to the equivalent

REPAIR PROCEDURES

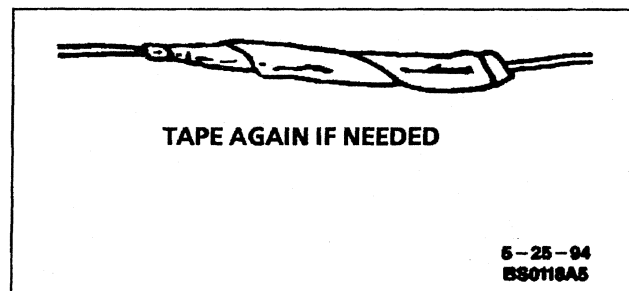


Figure 12 - Proper Second Taping

AWG size or use an AWG wire gage. If unsure about the wire size, begin with the largest opening in the wire stripper and work down until a clean strip of the insulation is removed. Strip approximately 7.5 mm (5/16 in.) of insulation from each wire to be spliced. Be careful to avoid nicking or cutting any of the wires. Check the stripped wire for nicks or cut strands. If the wire is damaged, repeat this procedure after removing the damaged section.

Step 4: Select and Position the Splice Sleeve

Select the proper splice sleeve according to wire size. The splice sleeves and tool nests are color coded (see following chart).

CRIMP AND SEAL SPLICE SLEEVE CHART

Color splice sleeve	Crimp tool nest color	Wire gage AWG/(metric)
Salmon (yellowish-pink)	Red	20, 18/(0.5, 0.8)
Blue	Blue	16, 14/(1.0, 2.0)
Yellow	Yellow	12, 10/(3.0, 5.0)

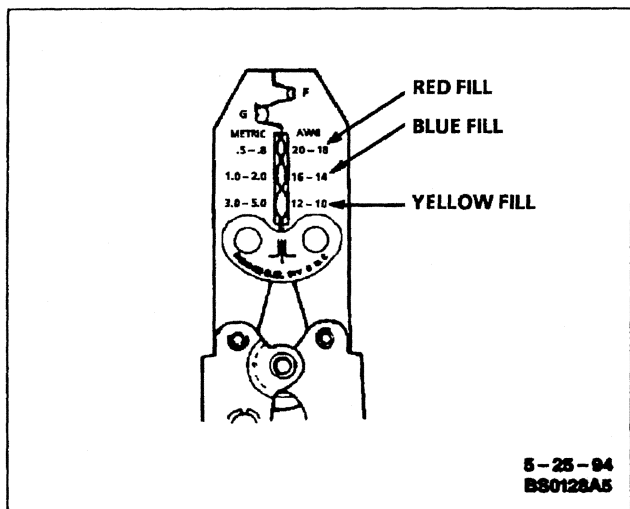


Figure 13 - Hand Crimp Tool

Using the J 38125-8 splice crimp tool (Figure 13), position the splice sleeve in the proper color nest of the hand crimp tool. Place the splice sleeve in the nest so that the crimp falls midway between the end of the barrel and the stop.

The sleeve has a stop in the middle of the barrel to prevent the wire from going further (see Figure 14). Close the hand crimper handles slightly to hold the splice sleeve firmly in the proper nest.

Step 5: Insert Wires into Splice Sleeve and Crimp

Insert the wire into the splice sleeve until it hits the barrel stop and close the handles of the J 38125-8 crimper tightly until the crimper handles open when released. The crimper handles will not open until the proper amount of pressure is applied to the splice sleeve. Repeat steps 4 and 5 for opposite end of the splice.

Step 6: Shrink the Insulation Around the Splice

Using the Ultratorch J 38125-5 (follow instructions that accompany Ultratorch), apply heat where the barrel is crimped. Gradually move the heat barrel to the open end of the tubing, shrinking the tubing completely as the heat is moved along the insulation. A small amount of sealant will come out of the end of the tubing when sufficient shrinking is achieved (Figure 14).

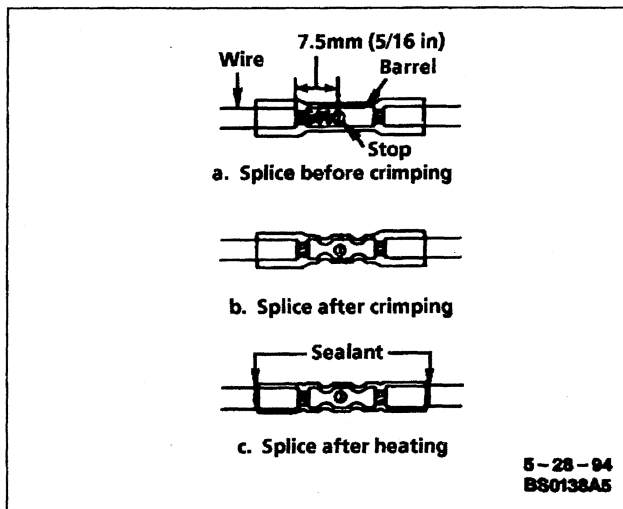


Figure 14 - Seal Splice Sequence

SPlicing TWISTED/SHIELDED CABLE

Twisted/shielded cable is sometimes used to protect wiring from electrical noise (stray signals). For example, two-conductor cable of this construction is used between the ECM and the distributor. See Figure 15 for a breakdown of twisted/shielded cable construction.

Step 1: Remove Outer Jacket

Remove the outer jacket and discard it. Be careful to avoid cutting into the drain wire or the mylar tape.

Step 2: Unwrap the Tape

Unwrap the aluminum/mylar tape, but do not remove it. The tape will be used to rewrap the twisted conductors after the splices have been made.

Step 3: Prepare the Splice

Untwist the conductors. Then, prepare the splice by following the splicing instructions for copper wire presented earlier. Remember to stagger splices to avoid shorts (Figure 16).

Step 4: Re-assemble the Cable

After you have spliced and taped each wire, rewrap the

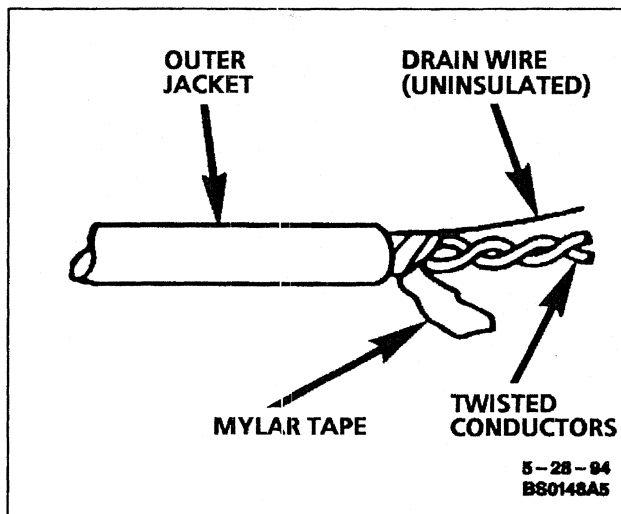


Figure 15 - Twisted/Shielded Cable

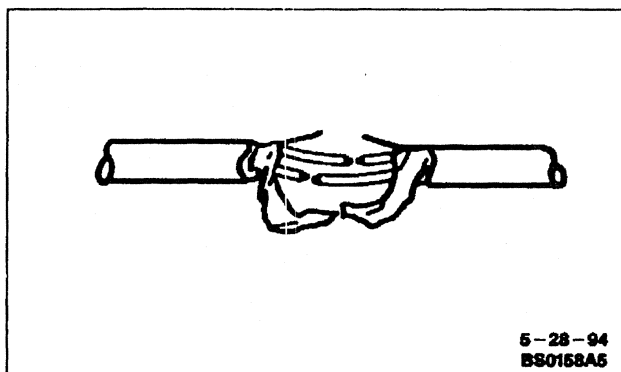


Figure 16 - The Untwisted Conductors

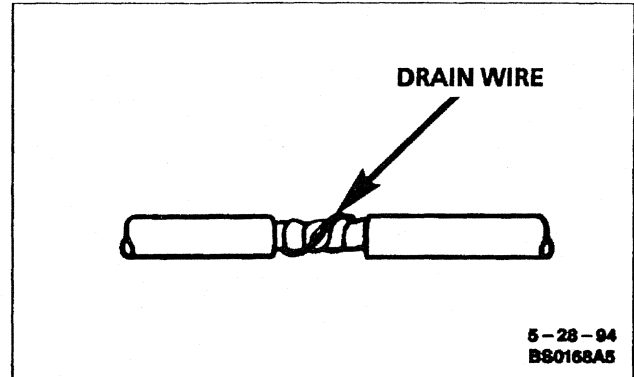


Figure 17 - The Re-assembled Cable

conductors with the mylar tape. Be careful to avoid wrapping the drain wire in the tape.

Next, splice the drain wire following the splicing instructions for copper wire. Then, wrap the drain wire around the conductors and mylar tape (Figure 17).

Step 5: Tape the Cable

Tape over the entire cable using a winding motion (see Figure 18). This tape will replace the section of the jacket you removed to make the repair.

REPAIRING CONNECTORS

- The following general repair procedures can be used to repair most types of connectors. The repair procedures are divided into three general groups: Push-to-Seat and Pull-to-Seat and Weather Pack®.
- See "Harness Connector Faces," page 8A-202-0, to determine which type of connector is to be serviced.
- Use the proper Pick(s) or Tool(s) that apply to the terminal.
- The Terminal Repair Kit (J 38125-A) contains further information.

PUSH-TO-SEAT AND PULL-TO-SEAT

Follow the steps below to repair Push-to-Seat (Figure 19) or Pull-to-Seat (Figure 20) connectors. The steps are

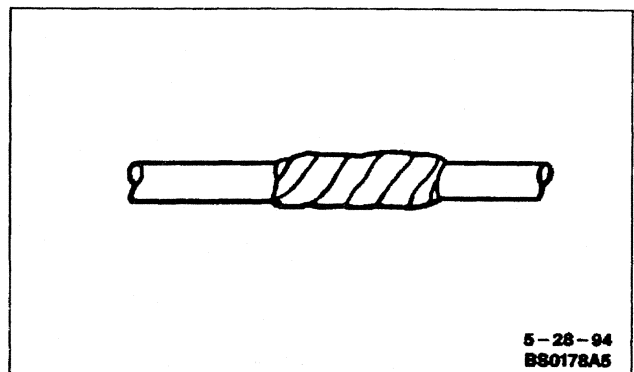


Figure 18 - Proper Taping

REPAIR PROCEDURES

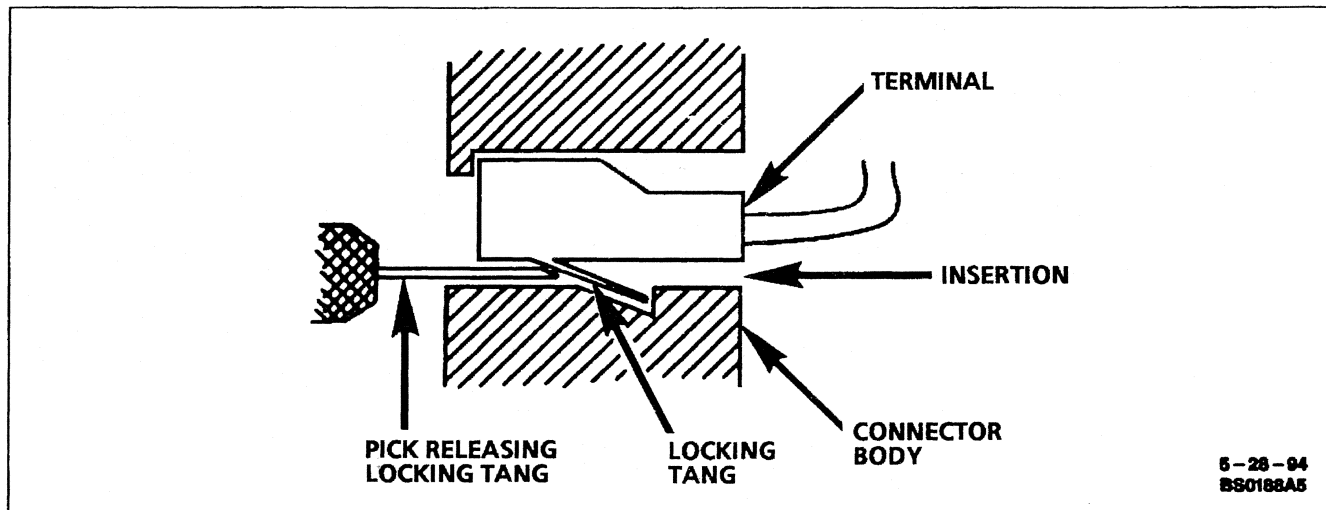


Figure 19 - Typical Push-to-Seat Connector and Terminal

illustrated with typical connectors. Your connector may differ, but the repair steps are similar. Some connectors do not require all the steps shown. Skip those that don't apply.

Step 1:

Remove any CPA (Connector Position Assurance) Locks. CPAs are designed to retain connectors when mated.

Step 2:

Remove any TPA (Terminal Position Assurance) Locks. TPAs are designed to keep the terminal from backing out of the connector.

NOTICE: The TPA must be removed prior to terminal removal and must be replaced when the terminal is repaired and resealed.

Step 3:

Open any secondary locks. A secondary lock aids in terminal retention and is usually molded to the connector.

Step 4:

Separate the connector halves and back out seals.

Step 5:

Grasp the lead and push the terminal to the forward most position. Hold the lead at this position.

Step 6:

Locate the terminal lock tang in the connector canal.

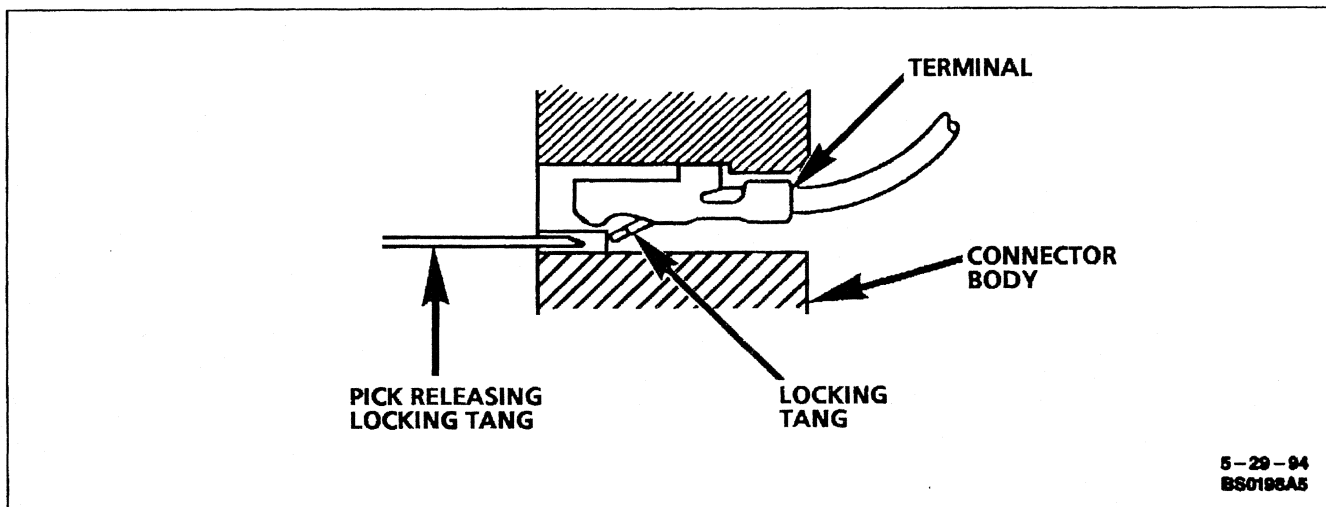


Figure 20 - Typical Pull-to-Seat Connector and Terminal

Step 7:

Insert the proper size pick (refer to Terminal Repair Kit J 38125-A) straight into the connector canal at the mating end of the connector.

Step 8:

Depress the locking tang to unseat the terminal.

- Push-to-Seat—Gently pull on the lead to remove the terminal through the back of the connector.

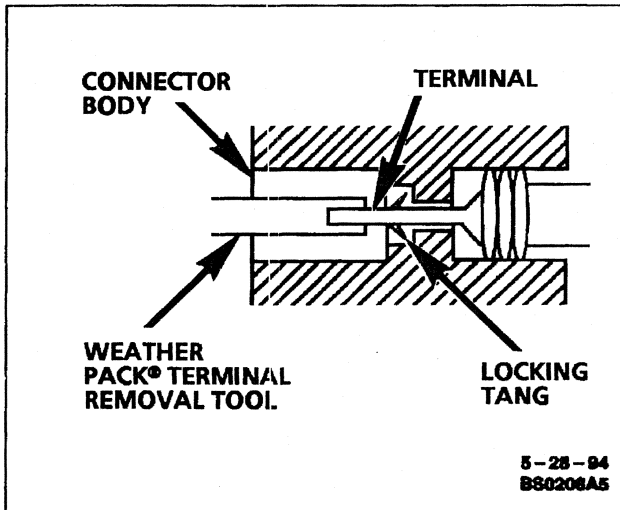


Figure 21 - Typical Weather Pack® Connector and Terminal

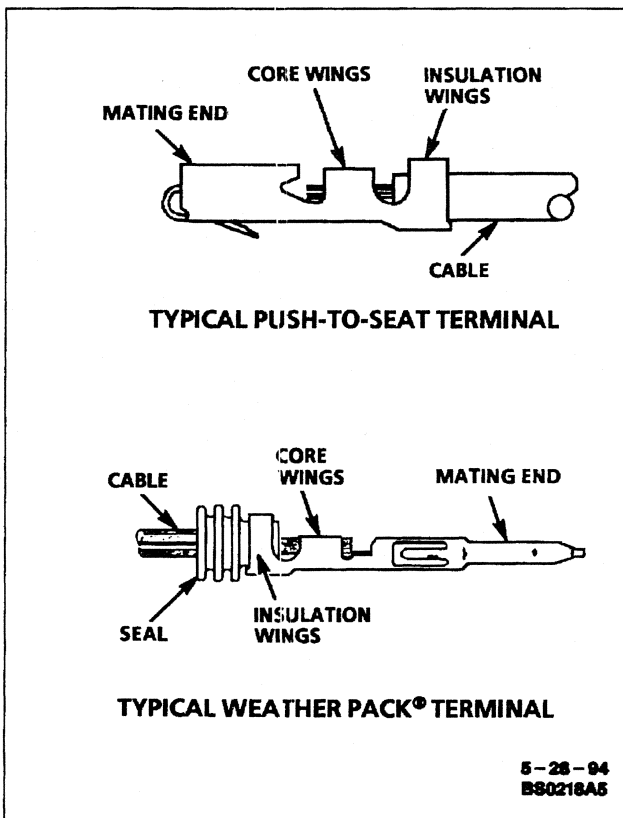


Figure 22 - Terminal Repair

- Pull-to-Seat—Gently push on the lead to remove the terminal through the front of the connector.

NOTICE: Never use force to remove a terminal from a connector.

Step 9:

Inspect terminal and connector for damage. Repair as necessary (see "Terminal Repair," page 8A-5-11).

Step 10:

Reform lock tang and reseat terminal in connector body. Apply grease if connector was originally equipped with grease.

Step 11:

Install any CPAs or TPAs, close any secondary locks and join connector halves.

WEATHER PACK®

Follow the steps below to repair Weather Pack® connectors (Figure 21).

Step 1:

Separate the connector halves.

Step 2:

Open secondary lock. A secondary lock aids in terminal retention and is usually molded to the connector.

Step 3:

Grasp the lead and push the terminal to the forward most position. Hold the lead at this position.

Step 4:

Insert the Weather Pack® terminal removal tool into the front (mating end) of the connector cavity until it rests on the cavity shoulder.

Step 5:

Gently pull on the lead to remove the terminal through the back of the connector.

NOTICE: Never use force to remove a terminal from a connector.

Step 6:

Inspect the terminal and connector for damage. Repair as necessary (see "Terminal Repair," on the following page).

Step 7:

Re-form the lock tang and reseat terminal in connector body.

REPAIR PROCEDURES

Step 8:

Close secondary locks and join connector halves.

TERMINAL REPAIR

The following repair procedures can be used to repair Push-to-Seat, Pull-to-Seat or Weather Pack® terminals (Figure 22). Some terminals do not require all steps shown. Skip those that don't apply. The Terminal Repair Kit (J 38125-A) contains further information.

Step 1:

Cut off terminal between core and insulation crimp (minimize wire loss) and remove seal for Weather Pack® terminals.

Step 2:

Apply correct seal per gauge size of wire and slide back along wire to enable insulation removal (Weather Pack® terminals only).

Step 3:

Remove insulation.

Step 4:

Align seal with end of cable insulation (Weather Pack® terminals only).

Step 5:

Position strip (and seal for Weather Pack®) in terminal.

Step 6:

Hand crimp core wings.

Step 7:

Hand crimp insulation wings (non-Weather Pack®).

Hand crimp insulation wings around seal and cable (Weather Pack®).

Step 8:

Solder all hand crimped terminals.

DIODE REPLACEMENT

Many vehicle electrical systems use a diode to isolate circuits and protect the components from voltage spikes. When installing a new diode, use the following procedure:

Step 1: Open the Harness

If the diode is taped to the harness, remove all of the tape.

Step 2: Remove Inoperative Diode

Paying attention to current flow direction, remove inoperative diode from the harness with a suitable soldering tool. If the diode is located next to a connector terminal, remove the terminal(s) from the connector to prevent damage from the soldering tool.

Step 3: Strip the Insulation

Carefully strip away a section of insulation next to the old soldered portion of the wire(s). Do not remove any more than is needed to attach the new diode.

Step 4: Install New Diode

Check current flow direction of the new diode, being sure to install the diode with correct bias. Reference the appropriate service manual wiring schematic to obtain the correct diode installation position. Reference Figure 23 for replacement diode symbols and current flow explanations. Attach the new diode to the wire(s) using 60/40 rosin core solder. Use a heat sink (aluminum alligator clip) attached

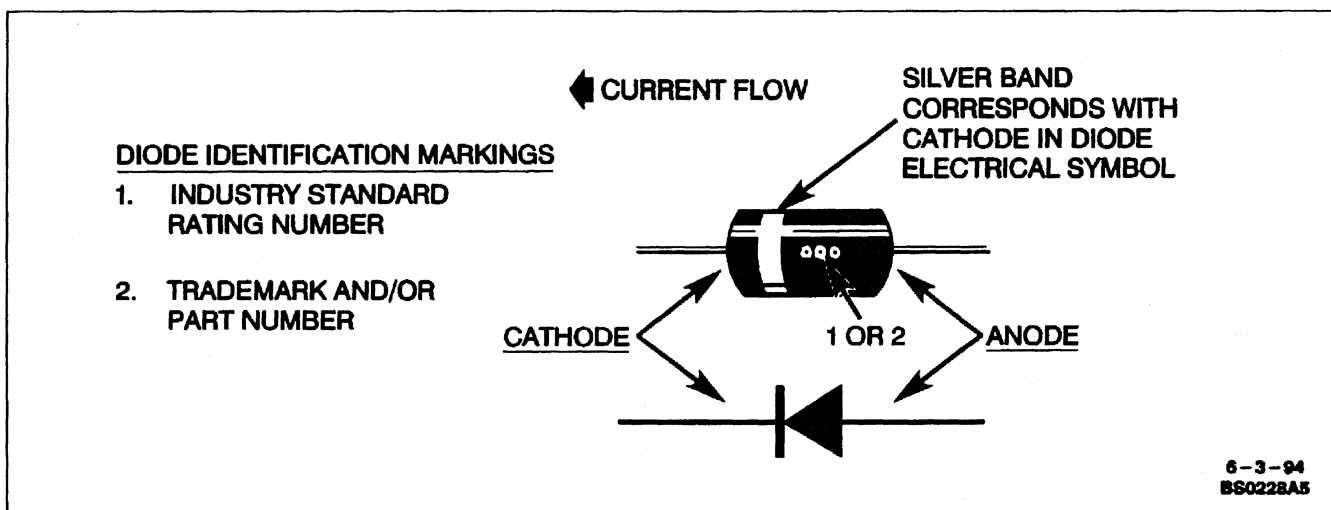


Figure 23 - Diode Identification

across the diode wire ends to protect the diode from excess heat. Follow the manufacturer's instructions for the soldering equipment you are using.

Step 5: Install Terminal(s)

Install terminal(s) into the connector body if previously removed in Step 2.

Step 6: Tape Diode to Harness

Tape the diode to the harness or connector using electrical tape. To prevent shorts to ground and water intrusion, completely cover all exposed wire and diode attachment points.

ACCEPTABLE DIODE REPLACEMENTS

Diode Brand	Rating Number	Rating	P/N
GMSP0	1N4004	1 amp, 400 PIV	12112421
GMSP0	1N5404	3 amp, 400 PIV	12112422
GMSP0	1N4001	1 amp, 50 PIV	16020519
GMSP0	1N4005	1 amp, 600 PIV	16011840
GMSP0	1N4004	1 amp, 400 PIV	16039386

In the event 1 amp, 50 PIV (Peak Inverse Rating) diodes are unavailable, a universal diode with a 1 amp, 400 PIV rating can be used for the following applications:

- A/C Compressor Clutch
- ABS/4WAL (the ABS Diode on the Delco Moraine is hidden inside of an electrical connector under the carpet at the right panel)
- Wiper
- Charging System (hidden in wire harness)
- Parking Brake (vehicle with ABS)
- Relays
- Solenoids
- Diesel Glow Plug Circuit

HEATED OXYGEN SENSOR (O2S) REPAIR

If the Heated Oxygen Sensor pigtail wiring, connector or terminal is damaged, the entire Oxygen Sensor Assembly must be replaced. Do not attempt to repair the wiring, connector or terminals. In order for the sensor to function properly, it must have provided to it a clean air reference. This clean air reference is obtained by way of the Oxygen Sensor signal and heater wires. Any attempt to repair the wires, connectors or terminals could result in the obstruction of the air reference and degraded Oxygen Sensor performance.

The following guidelines should be used when servicing the Heated Oxygen Sensor:

- Do not apply contact cleaner or other materials to the sensor or vehicle harness connectors. These materials may get into the sensor causing poor performance. Also, the sensor pigtail and harness wires must not be damaged in such a way that the wires inside are exposed. This could provide a path for foreign materials to enter the sensor and cause performance problems.
- Neither the sensor or vehicle lead wires should be bent sharply or kinked. Sharp bends, kinks, etc., could block the reference air path through the lead wire.
- Do not remove or defeat the Oxygen Sensor ground wire (where applicable). Vehicles that utilize the ground wired sensor may rely on this ground as the only ground contact to the sensor. Removal of the ground wire will also cause poor engine performance.
- To prevent damage due to water intrusion, be sure that the peripheral seal remains intact on the vehicle harness connector.

The Engine Harness may be repaired using Packard's Crimp and Splice Seals Terminal Repair Kit J 38125-A. Under no circumstances should repairs be soldered since this could result in the air reference being obstructed.

GMSP0 Standard Parts Catalog

Check the GMSP0 Standard Parts Catalog, Group 8.965. Fuses, circuit breakers, connectors, terminals, conduit, pigtail kits, and seals are listed in that group.

GMSP0 Carline Parts Catalog

The GMSP0 Carline Parts Catalog, Group 2.535 contains connector repair kits with terminals and leads.

Complete Harness

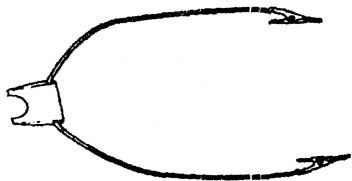
Complete harnesses should only be ordered when there is major damage to the wiring harness. Minor damage should always be repaired. Complete harness part numbers can be found in the GMSP0 Carline Parts Catalog.

Parts Ordering

1. If you can't find the repair parts you need in the J 38125-A Terminal Repair Kit, GMSP0 Standard Parts Catalog, or the GMSP0 Carline Parts Catalog, refer to Section 8A-202 (Harness Connector Faces) to find a listing of the OE part number(s).
2. Call PARTECH (1-800-433-6961) and give the PARTECH advisor the OE part number(s). The PARTECH advisor can determine if there is a GMSP0 part number(s) for the OE part number(s).

REPAIR PROCEDURES

3. If PARTECH cannot find a GMSPO part number, call the Service Parts Assistance Center (SPAC) with the OE part number(s). The SPAC advisor will assist you in placing a priority order using the "No Part Number" process with the Packard Electric Division. The SPAC advisor may have you place the order with the Packard Electric Division (1-800-PACKARD). Parts are typically shipped within 24 hours direct to your dealership.



J 36169
Jumper Wire



J 35689 - A
Micro-Pack Connector
Terminal Remover



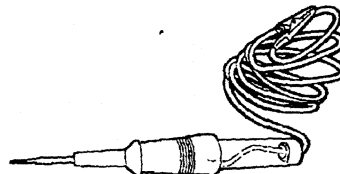
J 34636
Solenoid, Relay
and Circuit Tester



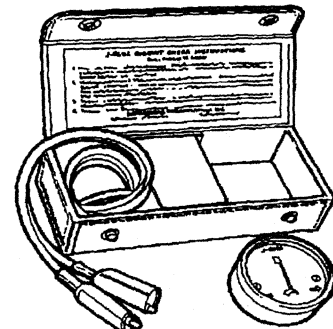
J 35616 - A
Connector Test Adapter Kit



J 28742 - A
Weather Pack II Terminal Remover



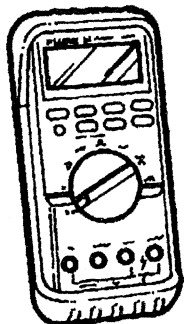
J 34142 - B
Unpowered Test Light



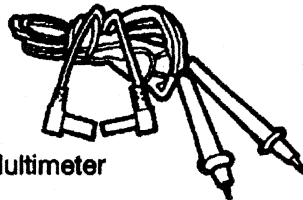
J 8681 - A
Universal Short Checker



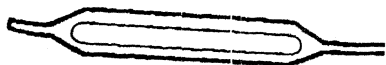
J 22727
Electrical Terminal Remover



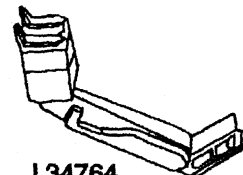
J 39200
Digital Multimeter



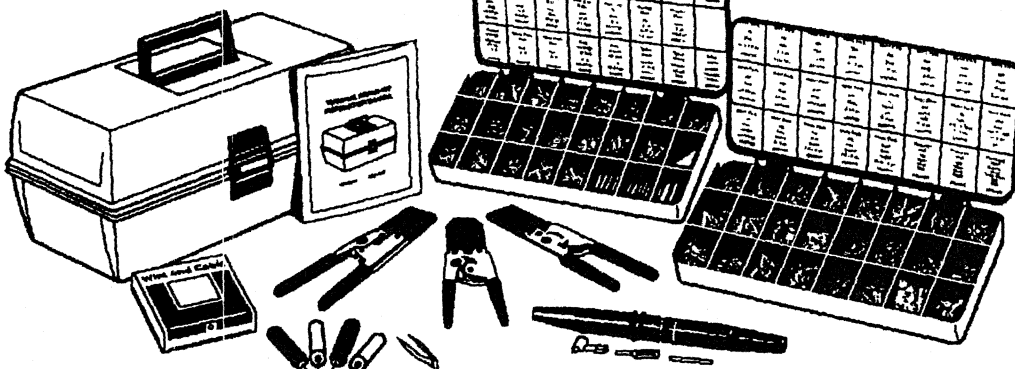
J 21008 - A
Self-Powered Test Light



J 33095
Terminal Remover: Micro Pack,
Com-Pack III and ECM Edgeboard
Connectors

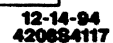


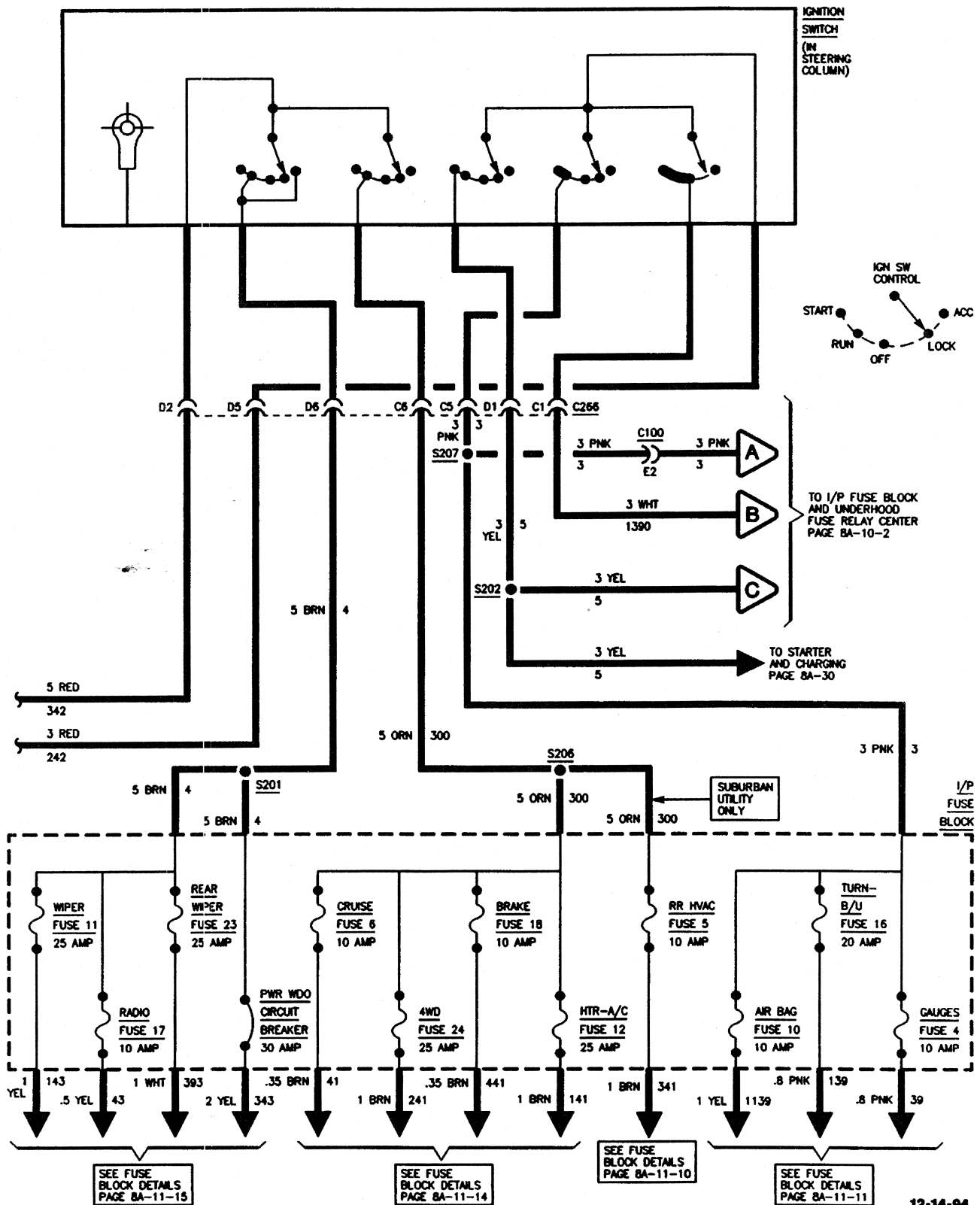
J 34764
Autofuse Tester



J 38125 - A
Terminal Repair Kit

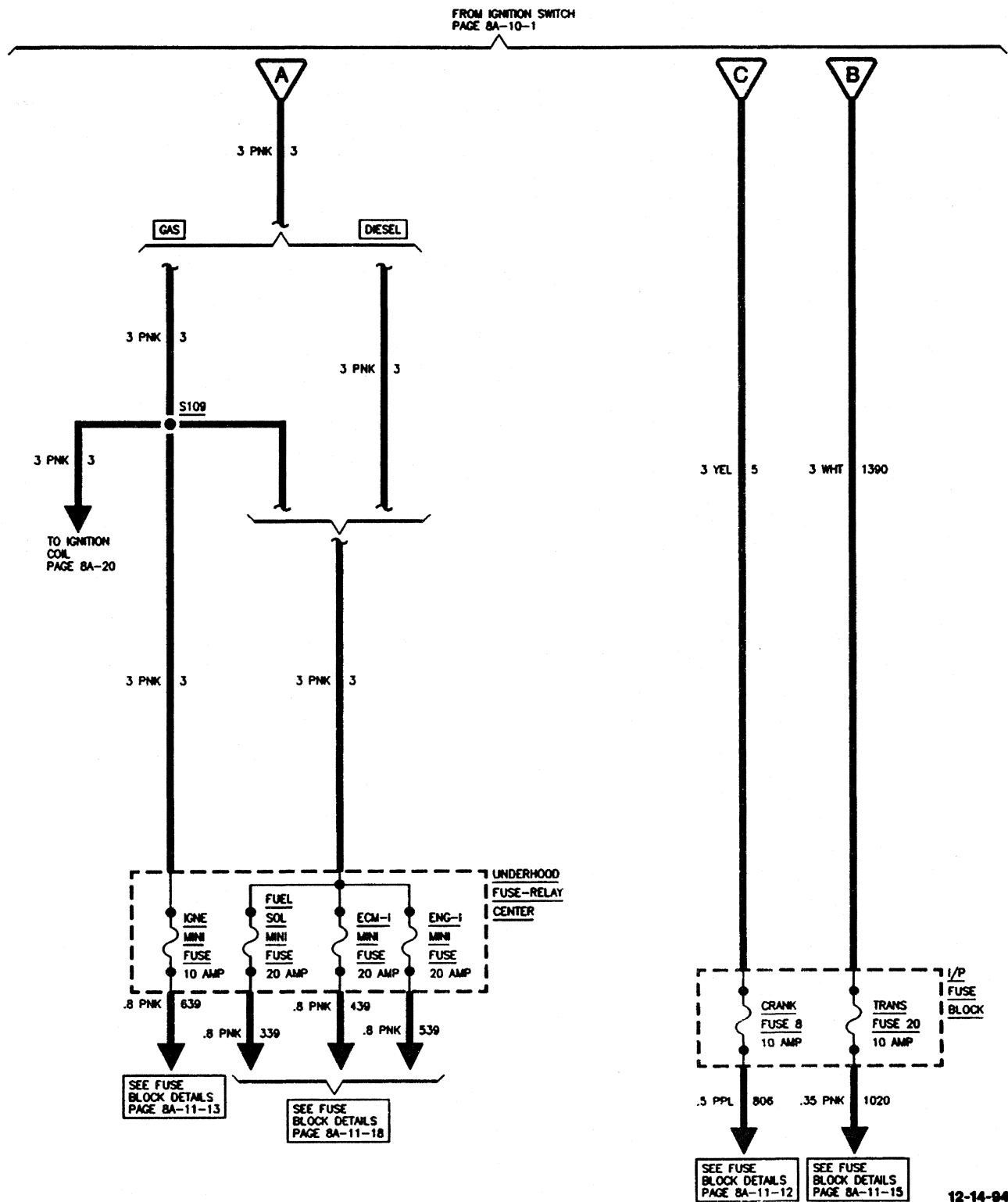
POWER DISTRIBUTION

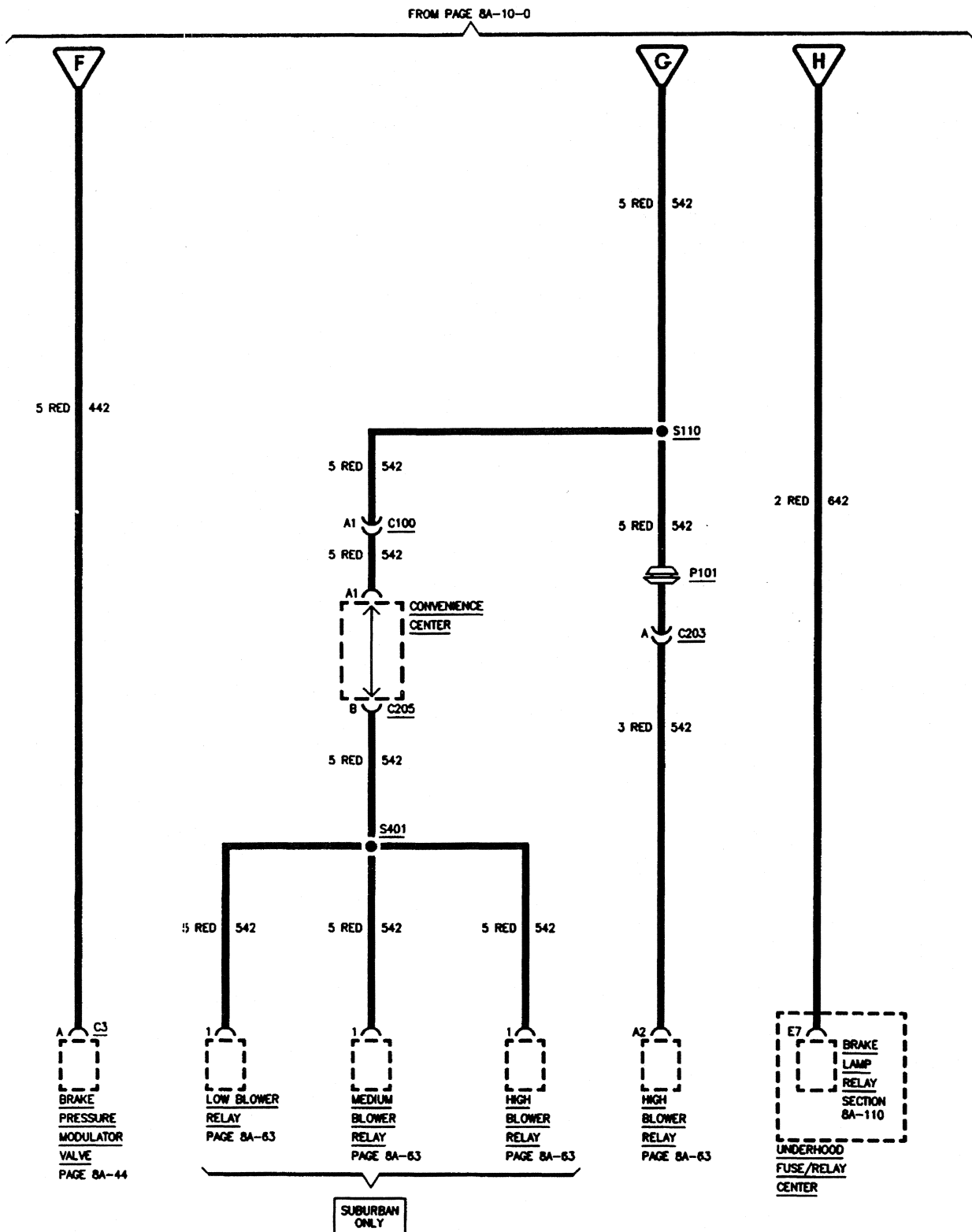




8A - 10 - 2 ELECTRICAL DIAGNOSIS

POWER DISTRIBUTION





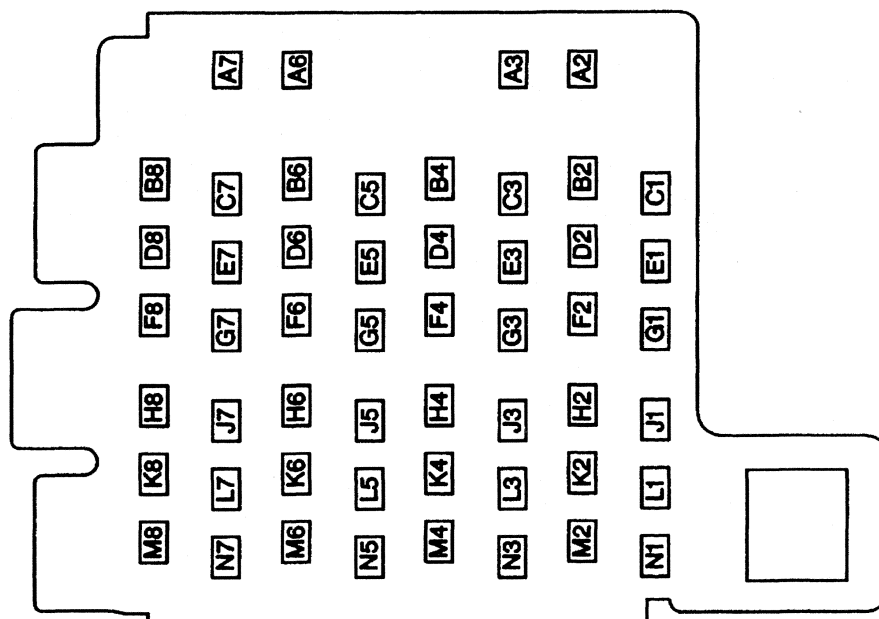
8A - 10 - 4 ELECTRICAL DIAGNOSIS

POWER DISTRIBUTION

COMPONENT	LOCATION	201-PG	FIG.	CONN
Battery, LH Diesel	LH front of engine compartment	1	4	
Battery, RH Diesel	RH front of engine compartment	1	4	
Clutch Pedal Position Switch....	At top of clutch pedal			
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead	34	41	
Fuse Block	Lower LH side of I/P	43	55	
Head Light (Off/On) & Panel				
Dimmer Switch	Upper LH side of I/P	27	32	
Headlamp (Off/On) & Panel				
Dimmer Switch	Upper LH side of I/P	26	31	
I/P Fuse Block	Lower LH side of I/P			
Ignition Switch	Under I/P, on steering column			
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C202	Under I/P mounted to bracket left of steering column			
C203	Behind RH portion of I/P, near heater motor, in foam wrap..	28	33	
C205	At convenience center			
C266	LH side of steering column, near bulkhead	26	31	
GROMMETS:				
P101	RH lower cowl (engine compartment)	21	24	
GROUND:				
G100	RH front of engine	1, 2 ...	3, 4	
G101	RH inner fender, near battery	2, 4 ...	4, 7	
G102	LH front top of engine (diesel)	1, 2 ...	4, 5	
SPLICES:				
S100	Positive battery cable, near battery	1	3	
S109 (VIN H, K)	Engine harness, approx. 28 cm from C100			
S109 (VIN K)	Engine harness, approx. 28 cm from C100			
S109 (VIN Z, N)	Engine harness, approx. 25 cm from C100			
S110 (VIN H, K, N)	Engine harness, approx. 21 cm from C100			
S110 (VIN P)	Engine harness, 15 cm from generator breakout			
S110 (VIN S)	Engine harness, 29 cm from C100			
S165	I/P harness approx. 8 cm from breakout to steering column harness			

COMPONENT	LOCATION	201-PG	FIG.	CONN
S200	I/P harness, approx. 4 cm left of cruise control harness breakout			
S200 (Diesel)	I/P harness, approx. 4 cm left of breakout for crossbody harness connector C298			
S201	I/P harness, approx. 23 cm from TCC stop lamp switch connector			
S202	I/P harness, approx. 27 cm from TCC stop lamp switch connector			
S203	Under LH side of I/P	53	.....	65
S205	I/P harness, approx. 4 cm right of steering column connector breakout			
S206	I/P harness, approx. 6 cm right of steering column connector breakout			
S207	I/P harness, approx. 8 cm right of steering column connector breakout			
S242	I/P harness, approx. 8 cm right of fuse block breakout			
S242 (Crew Cab, VIN F)	I/P harness approx. 8 cm right of breakout for LH door jamb switch			
S276	Under LH side of I/P	43	.....	55
S289	I/P harness, approx. 12 cm from breakout to steering column harness			
S401 (Rear Heat & A/C)	Rear heat and A/C harness, 13 cm from blower motor relays breakout			

FUSE BLOCK DETAILS I/P FUSE BLOCK



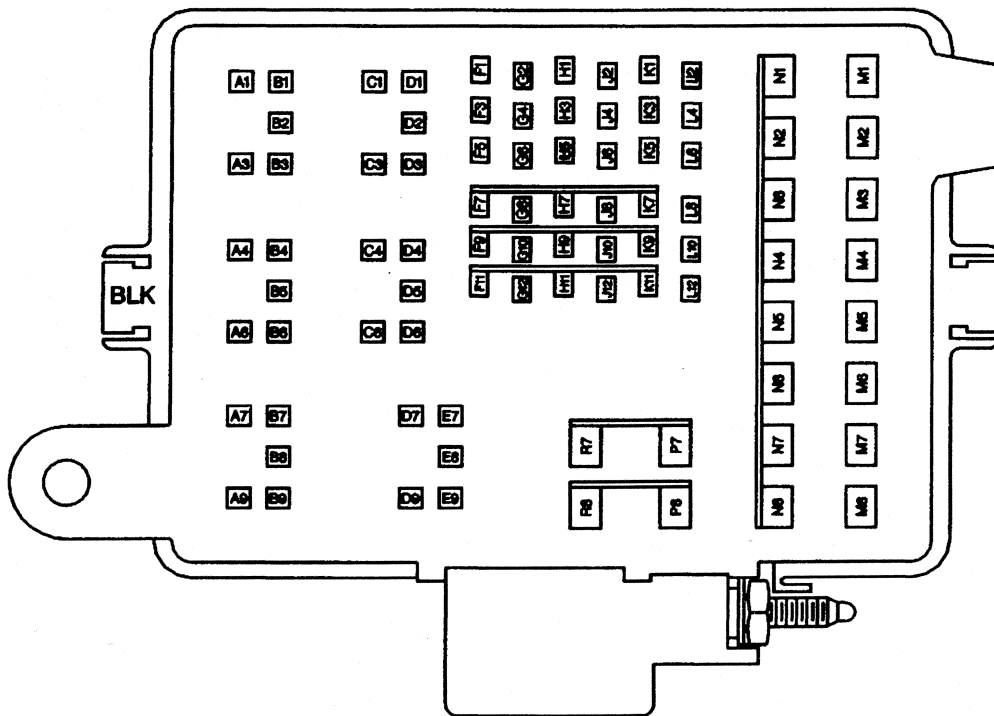
FUSE BLOCK DETAILS

I/P FUSE BLOCK

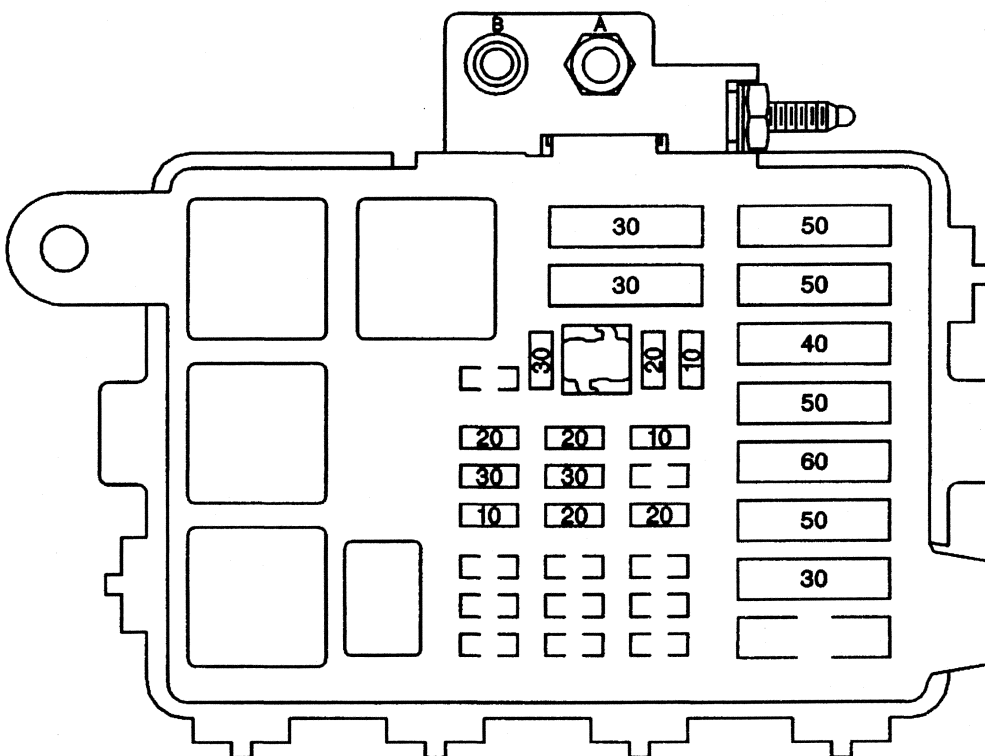
I/P FUSE BLOCK

NAME	FUSE NUMBER	SIZE	CIRCUIT	LOADS
STOP/HAZ	1	20A FUSE	140	STOP/TCC SWITCH, BUZZER FLASHER, CHMSL, HAZARD LAMPS, STOP LAMPS
T CASE	2			
CTSY	3	20A FUSE	40	COURTESY LAMPS, CARGO LAMP, GLOVE LIGHT, DOME RDG LPS, VANITY MIRRORS, POWER MIRRORS
GAUGES	4	10A FUSE	39	DRL RELAY, DRL MDL. BUZZER, HDLP SW, KEYLESS ENTRY, CLUSTER, LOW COOLANT MODULE
RR HVAC	5	10A FUSE	341	RR HVAC CONTROLS, UTILITY, SUBURBAN ONLY
CRUISE	6	10A FUSE	41	CRUISE MDL, CRUISE ACTIVATOR SW
AUX PWR	7	25A FUSE	840	POWER OUTLET
CRANK	8	10A FUSE	806	DIESEL FUSE PUMP, DERM. ECM
PARK LPS	9	20A FUSE	240	LIC LP, PARK LP, TAIL LP, ASHTRAY LP, ROOF MARKER, TAIL GATE, LPS PANEL LPS, TRAILER TAIL LPS, FRONT SIDE MARKERS, FOG LP RLY, DOOR SW ILLUM, FENDER LAMPS, H/L SW ILLUMINATION
AIR BAG	10	10A FUSE	1139	DERM (SIR)
WIPER	11	25A FUSE	143	WIPER MOTOR, WASHER PUMP
HTR-A/C	12	25A FUSE	141	L, M1, M2 BLOWER, HVAC IND. LP, A/C COMP, MODE/TEMP/AIR IN ACT., HIGH BLOWER RELAY
CIG LTR	13	20A FUSE	640	POWER AMPLIFIER, REAR LIFTGLASS, CIGAR LIGHTER, DOOR LOCK RELAY, PWR LUMBAR SEAT
ILLUM	14	10A FUSE	8	4WD IND, LP, CLUSTER, HVAC CONTROLS, CHIME MDL, RR HVAC CONTROLS, I/P SWITCHES, RADIO ILLUM
DRL/FOG	15	20A FUSE	340	DRL RELAY, FOG LAMPS
TURN-B/U	16	20A FUSE	139	FRT TURN, RR TURN, TRAILER TURN, B/U LPS, BTSI SOLENOID
RADIO	17	10A FUSE	43	RADIO (IGN)
BRAKE	18	10A FUSE	441	4WAL/PCM, ABS, CRUISE
RADIO, BATT	19	10A FUSE	1140	RADIO (BATT)
TRANS	20	10A FUSE	1020	PRNDL, AUTO TRANSMISSION, SPEEDO, CHECK GAUGES, TELL TALE
	21			
	22			
RR WIPER	23	25A FUSE	393	REAR WIPER, REAR WASH PUMP, UTILITY, SUBURBAN ONLY
4WD	24	25A FUSE	241	FRT AXLE ACT., 4WD IND. LP, AUX. BATT. RELAY
PWR ACCY	A	C/B*	540	PWR DR LK, 6WAY PWR ST, KEYLESS ENTRY MDL
PWR WDOS	B	C/B*	343	PWR WDOS

FUSE BLOCK DETAILS UNDERHOOD FUSE/RELAY CENTER



REAR VIEW



FRONT VIEW

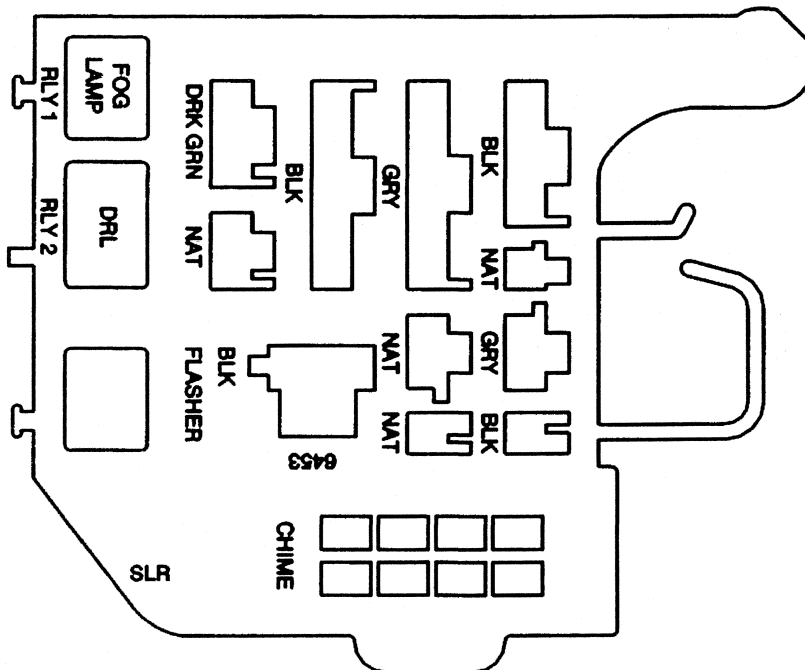
FUSE BLOCK DETAILS

UNDERHOOD FUSE/RELAY CENTER

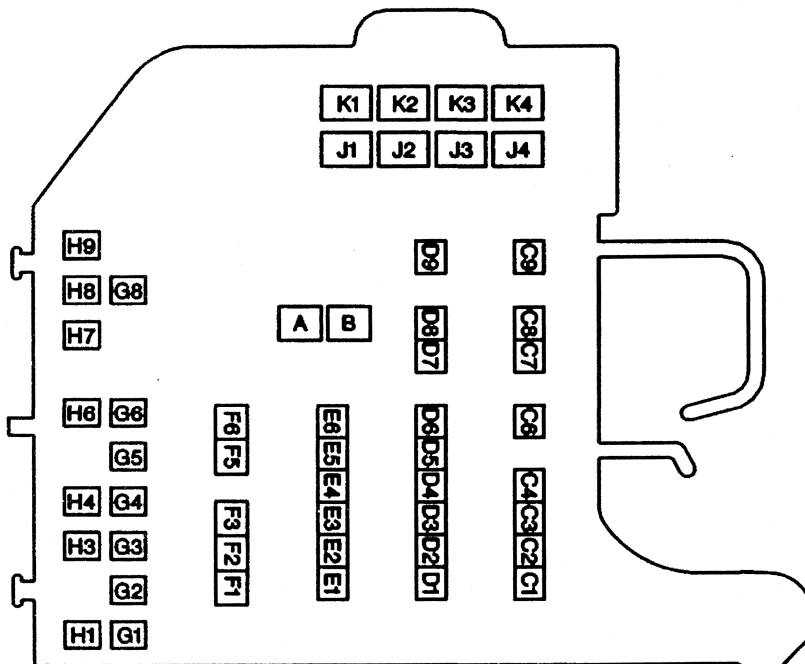
UNDERHOOD FUSE - RELAY CENTER

NAME	FUSE NUMBER	SIZE	CIRCUIT	LOADS
	M1-N1			(SPARE)
STOP	M2-N2	30A MAXI FUSE	642/2	STOP LPS
A/C	M3-N3	50A MAXI FUSE	542/2	HI BLOWER RLY & REAR BLOWER RELAYS
ABS	M4-N4	60A MAXI FUSE	442/2	ANTI-LOCK BRAKE MODULE
IGN B	M5-N5	50A MAXI FUSE	342/2	IGN B SWITCH GO TO FUSE BLOCK BUSBAR
IGN A	M6-N6	40A MAXI FUSE	242/2	IGN A SWITCH GO TO FUSE BLOCK BUSBAR
BATTERY	M7-N7	50A MAXI FUSE	142/2	BATTERY, FUSE BLOCK BUSBAR
LIGHTING	M8-N8	50A MAXI FUSE	42/2	HDLF & PANEL DIMMER SW., FOG & CTSY FUSES
A/C COMP	L12-K11	10A FUSE	1240/2	SW A/C PRESS TO A/C CLUTCH
HORN	J12-H11	20A FUSE	740/2	HORN, UNDERHOOD LPS
ECM B	G12-F11	20A FUSE	440/2	FUEL PUMP, PCM
AUX FAN	J10-H9	30A FUSE	1540/2	AUX FAN
RR-DEFOG	G10-F9	30A FUSE	1440/2	RR DEFOG
ENG I	L8-K7	20A FUSE	539/3	IGN A SWITCH TO ENGINE LOADS, EGR, CANISTER PURGE, EVRV IDLE COAST SOLENOID, HEATED O2, FUEL HEATER, WATER SENSOR
ECM I	J8-H7	20A FUSE	439/3	INJECTOR #1, INJECTOR #2, PCM
FUEL SOL	G8-F7	20A FUSE	339/3	FUEL SOLENOID, DIESEL ENG., ONLY
IGN E	G6-F5	10A FUSE	639/3	AUX FAN RLY COIL, HOT FUEL MODULE
GLOW PLUGS	G4-F3	10A FUSE	507B/503H	GLOW PLUGS
STUD "A"	R7-P7	30A		
STUD "B"	R8-P8	30A		CAMPER/TRAILER WRG

FUSE BLOCK DETAILS
CONVENIENCE CENTER



FRONT VIEW

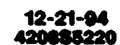


REAR VIEW

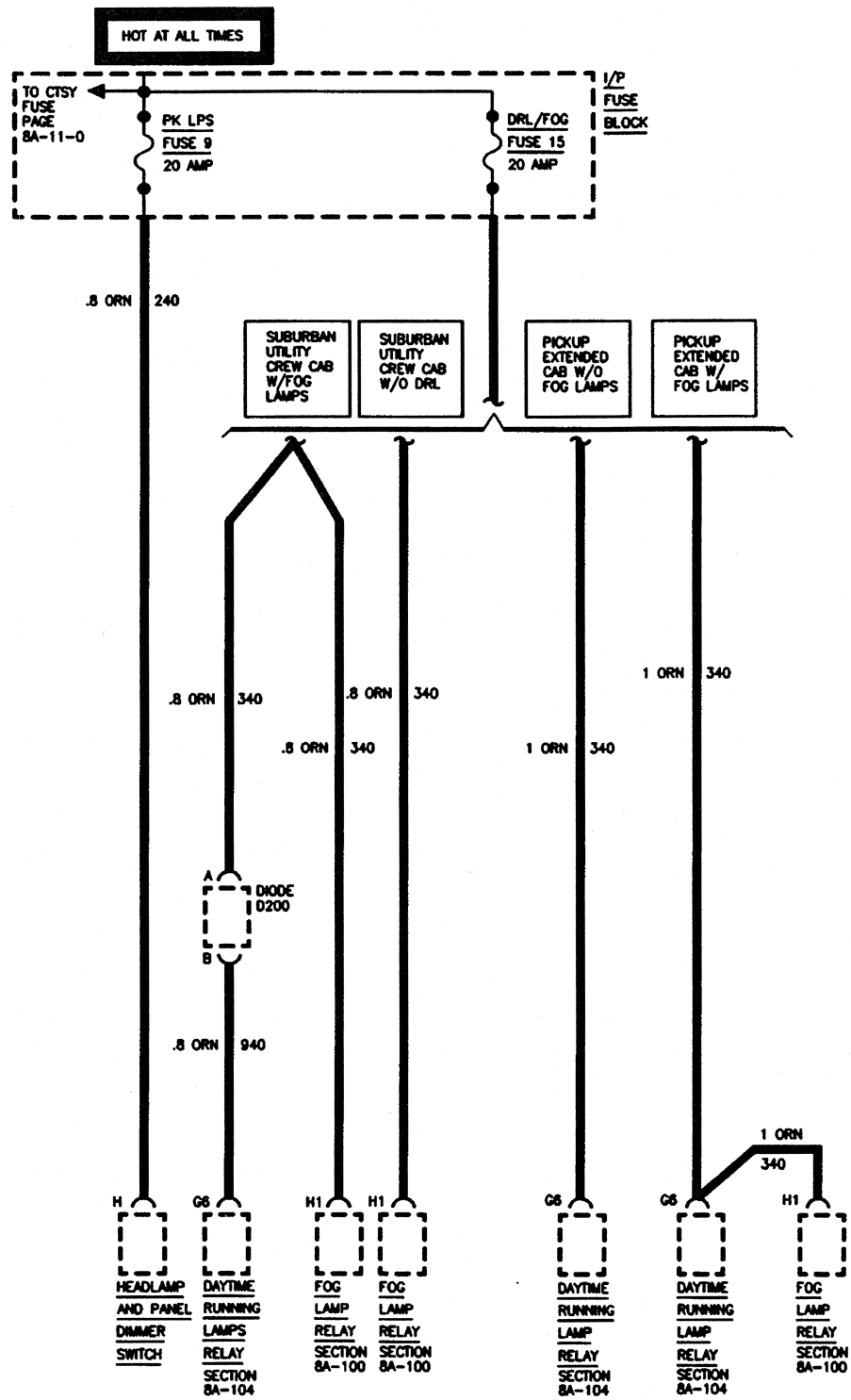
FUSE BLOCK DETAILS CONVENIENCE CENTER

CONVENIENCE CENTER

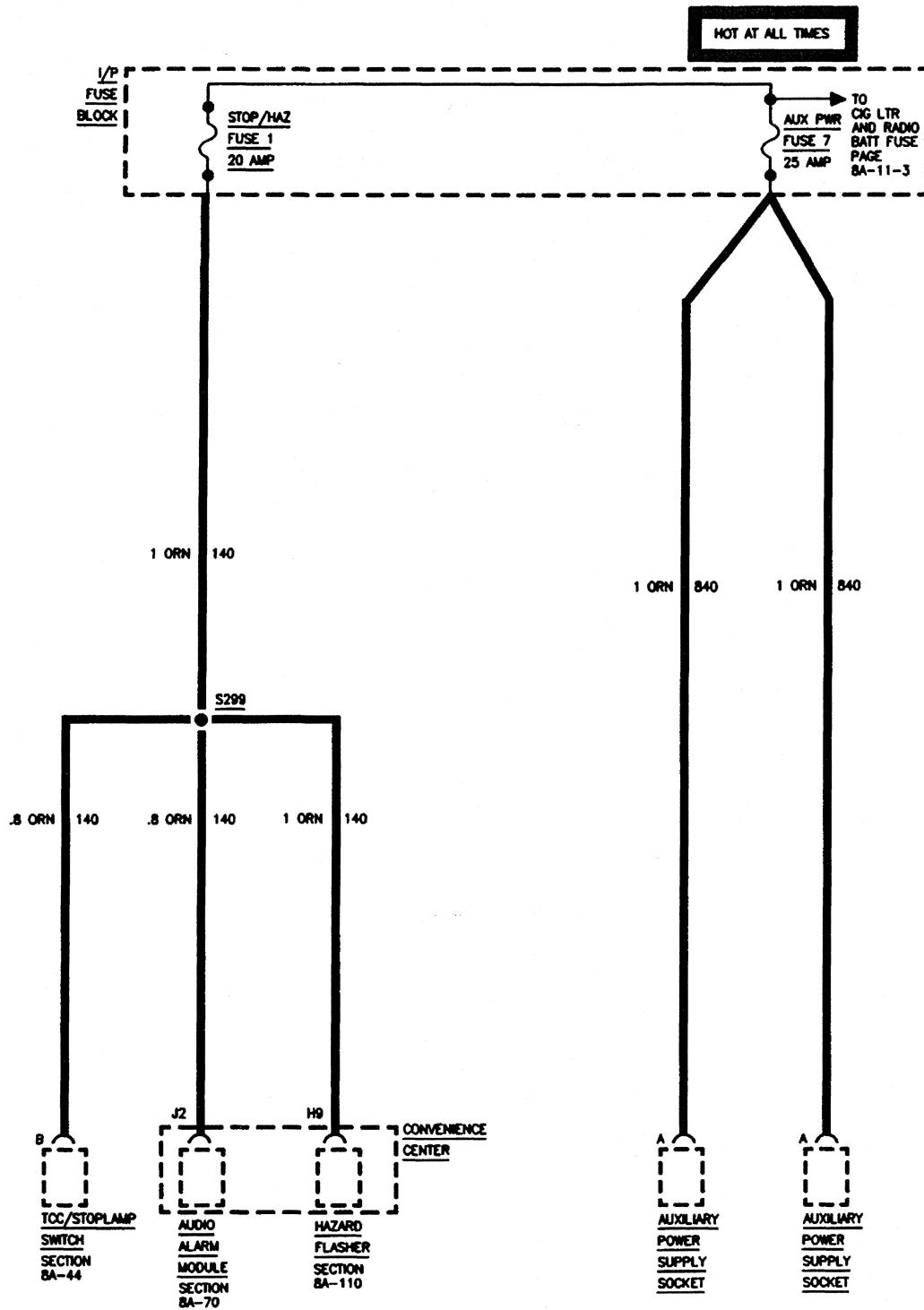
CAVITY	GAUGE/COLOR	CIRCUIT #	DESCRIPTION
A	5.0 RED	542	B+ -RR BLOWER (SUBURBAN)
B	1.0 BRN	341	IGN3- RR HVAC
C4			NOT USED
C6	2.0 BUS	150	BAR GRD. E/C MIRRORS
C7	.80 BLK	9	ROOF MKRS FEED
C8	.80 BRN	150	ROOF MRKS GRD
C9			NOT USED
D1	1.0 BLK/WHT	1695	4-WD IND
D2	.80 ORN	640	POWER SEATS B+
D3	2.0 ORN	540	POWER DOOR LOCKS B+
D4	2.0 YEL	343	IGN 3
D5	.80 BLK	1576	RR RELEASE SW PWER (SUBURBAN/UTILITY)
D6	2.0 BLK	150	GRD LK/WDO/4WD LP (BUS BAR WITH C6)
D7	.35 PNK	39	E/C MIRRORS
D8	.80 ORN	40	B+ VANITY MIRROR
D9	2.0 PPL	293	RR DEFOG
E1	.50 DK BLU	1926	BLOWER LOW
E2	.50 RED	1925	RR BLOWER MED
E3	.50 WHT	1924	RR BLOWER HI
E4	1.0 LT BLU	97	RR WIPER MIST/OFF/LOW
E5	1.0 GRY	391	RR WIPER
E6	1.0 DK GRN	392	RR WASHER
F1			NOT USED
F2			NOT USED
F3			NOT USED
F5			NOT USED
F6			NOT USED
G1	.80 YEL	317	FOG LPS RELAY COIL-FEED
G2			NOT USED
G3	2.0 PPL	34	FOG LPS FEED
G4	.35 PNK	39	DRL. RLY COIL FEED
G5	1.0 BLK	150	DRL. RLY GRD
G6	1.0 ORN	340	DRL. RLY B+
G8	.80 BLK	150	HAZARD FLASHER GRD
H1	1.0 ORN	340	FOG LP, PWR FEED
H3	1.0 LT GRN	11	FOG LP, RELAY H. BEAM HDLP FEED
H4	1.0 DK BLU	593	DRL. RELAY H. BEAM HDLP FEED
H6	.80 LT GRN BLK	592	DRL RELAY OUTPUT-COIL
H7	1.0 BRN	27	TURN SIGNAL FLASHER OUTPUT
H8			NOT USED
H9	1.0 ORN	1408	ELECTRONIC FLASHER FEED
J1	.35 GRY	8	INST PANEL LPS
J2	.80 ORN	140	BUZZER B+
J3	.80 LT GRN	80	BUZZER KEY REMINDER SW. SIGNAL
J4			NOT USED
K1	.80 BLK/WHT	238	BUZZER SEAT BELT SW. SIGNAL
K2	.80 BLK	150	BUZZER GRD
K3	.80 YEL	234	BUZZER SEAT BELT WARNING
K4	.35 PNK	39	BUZZER COIL FEED



FUSE BLOCK DETAILS

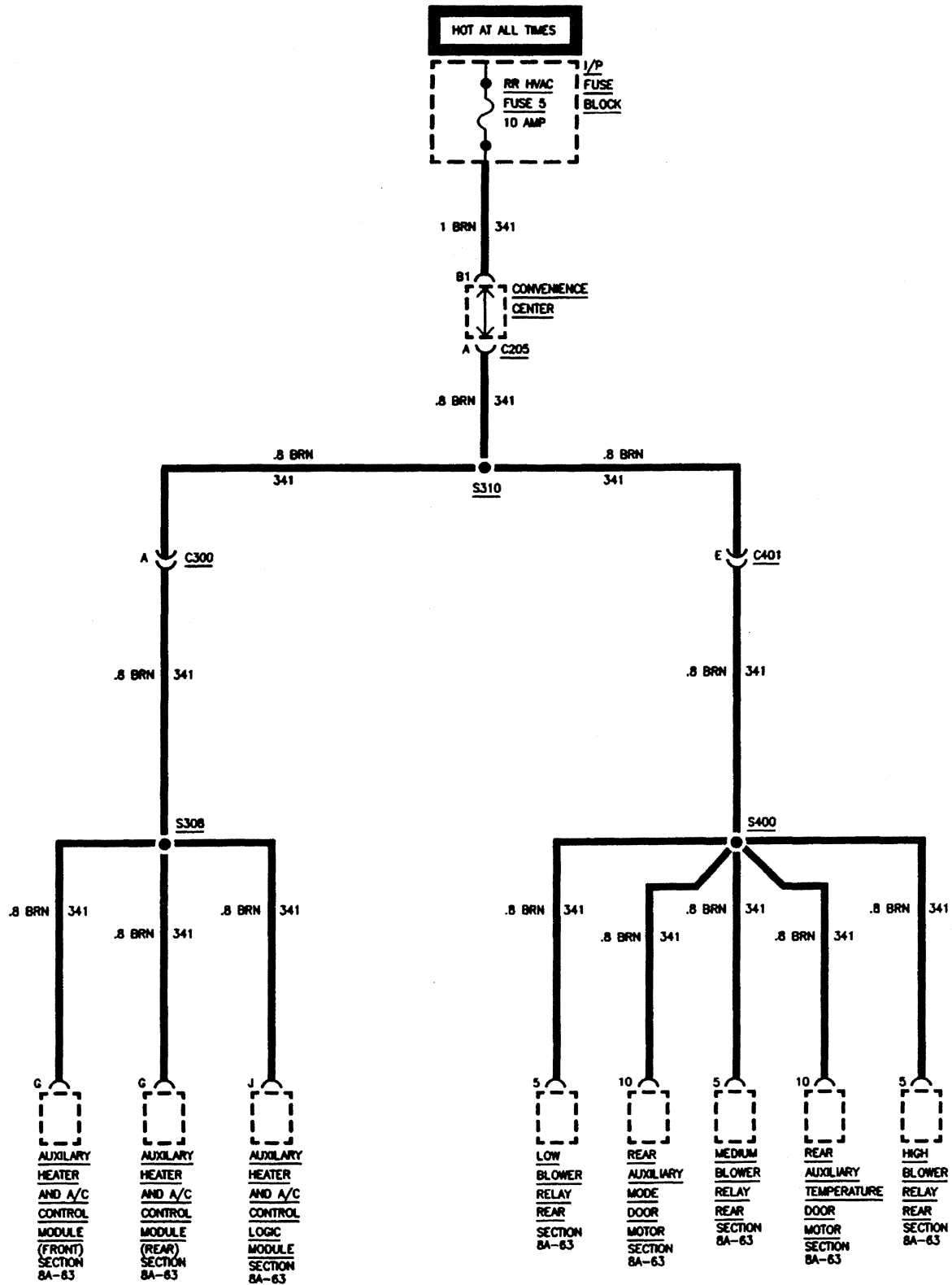


FUSE BLOCK DETAILS

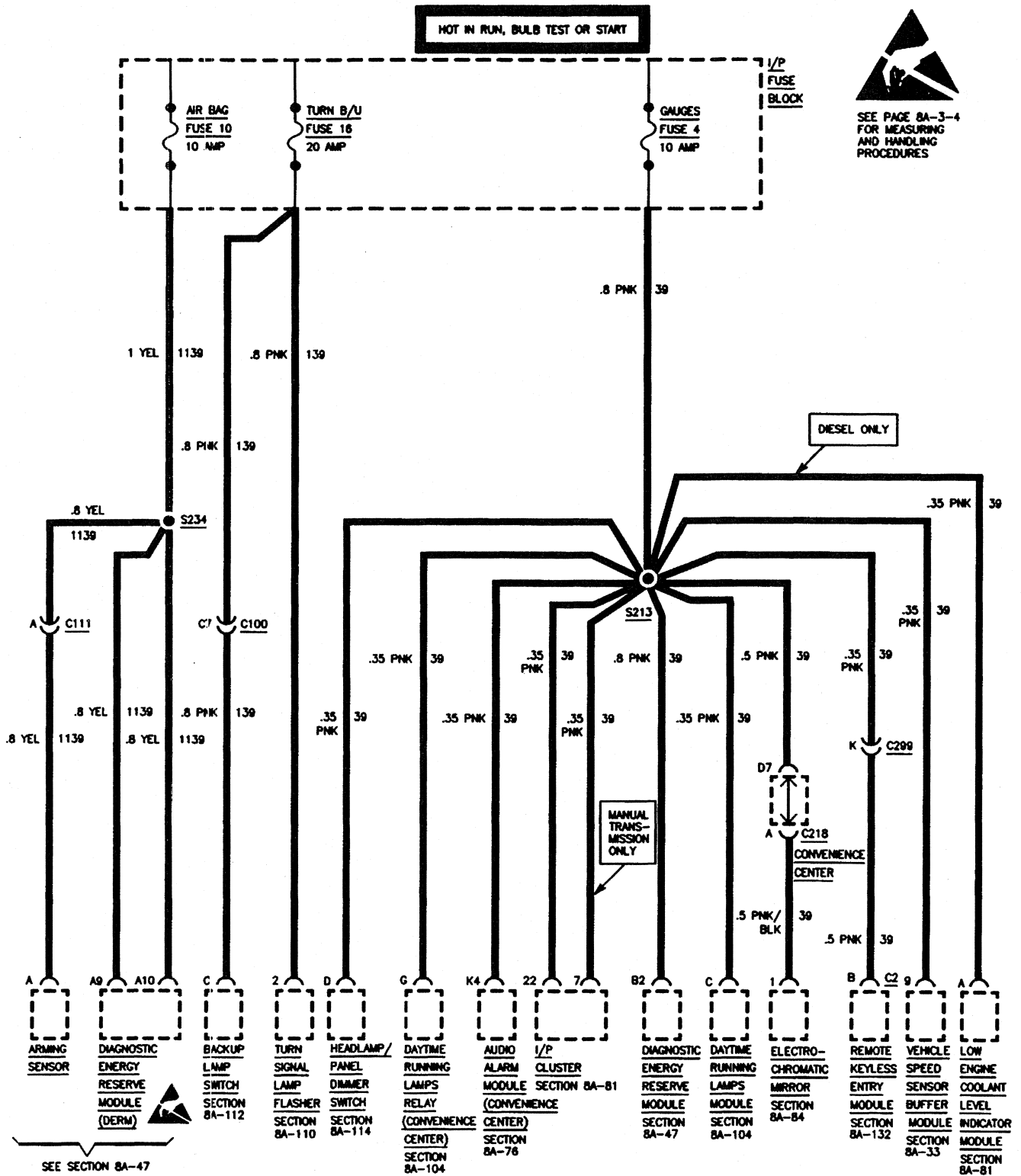


8A - 11 - 10 ELECTRICAL DIAGNOSIS

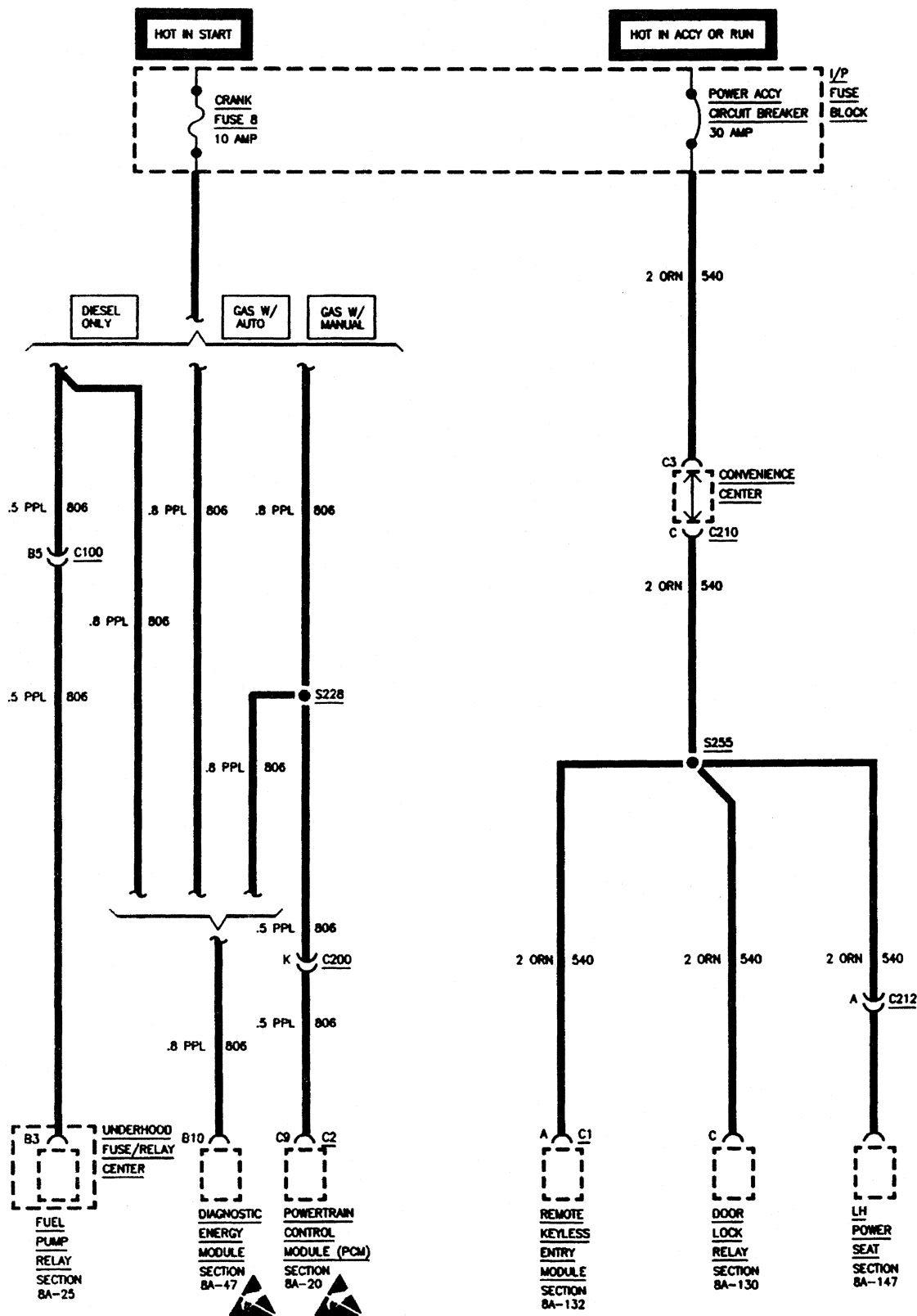
FUSE BLOCK DETAILS



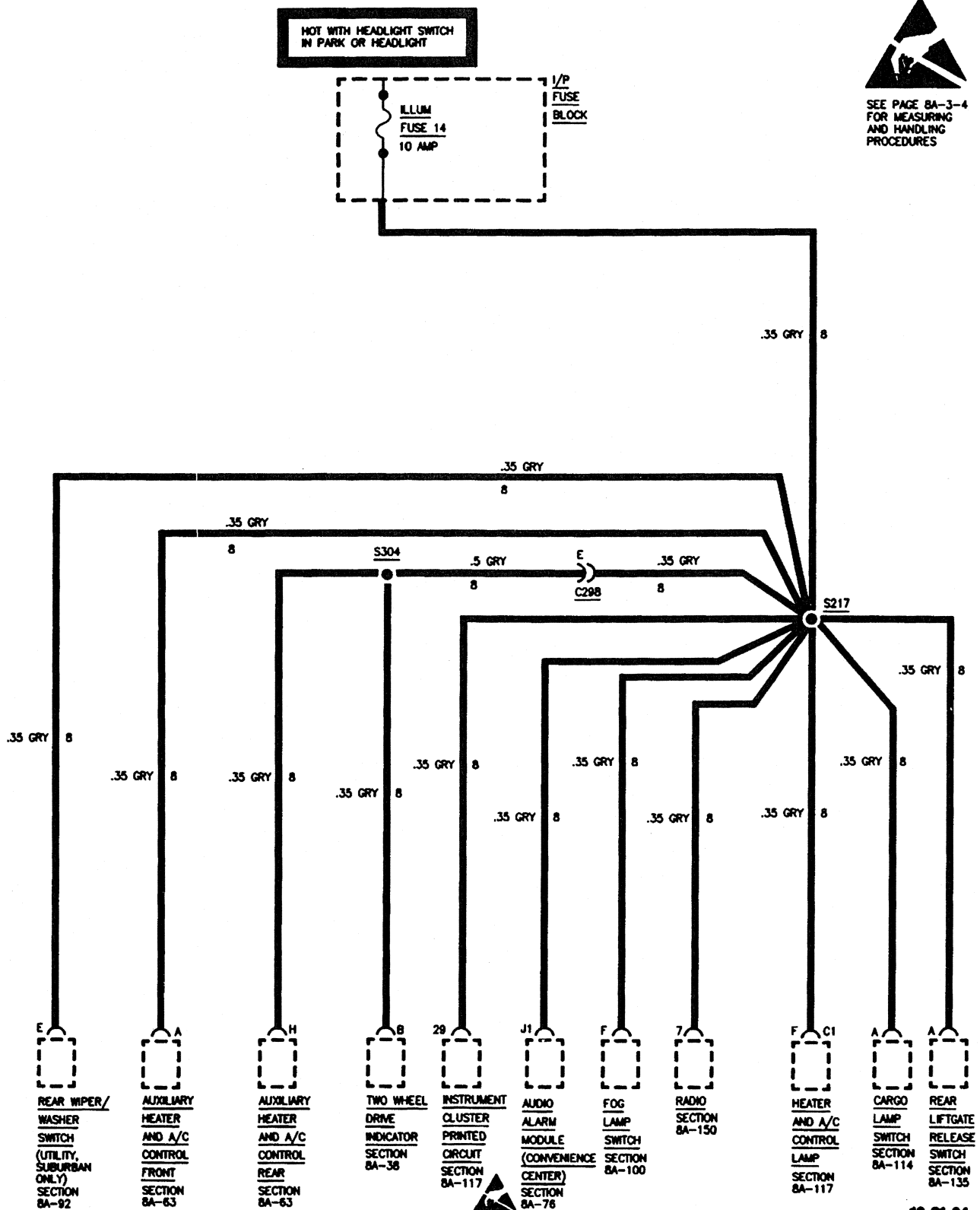
FUSE BLOCK DETAILS



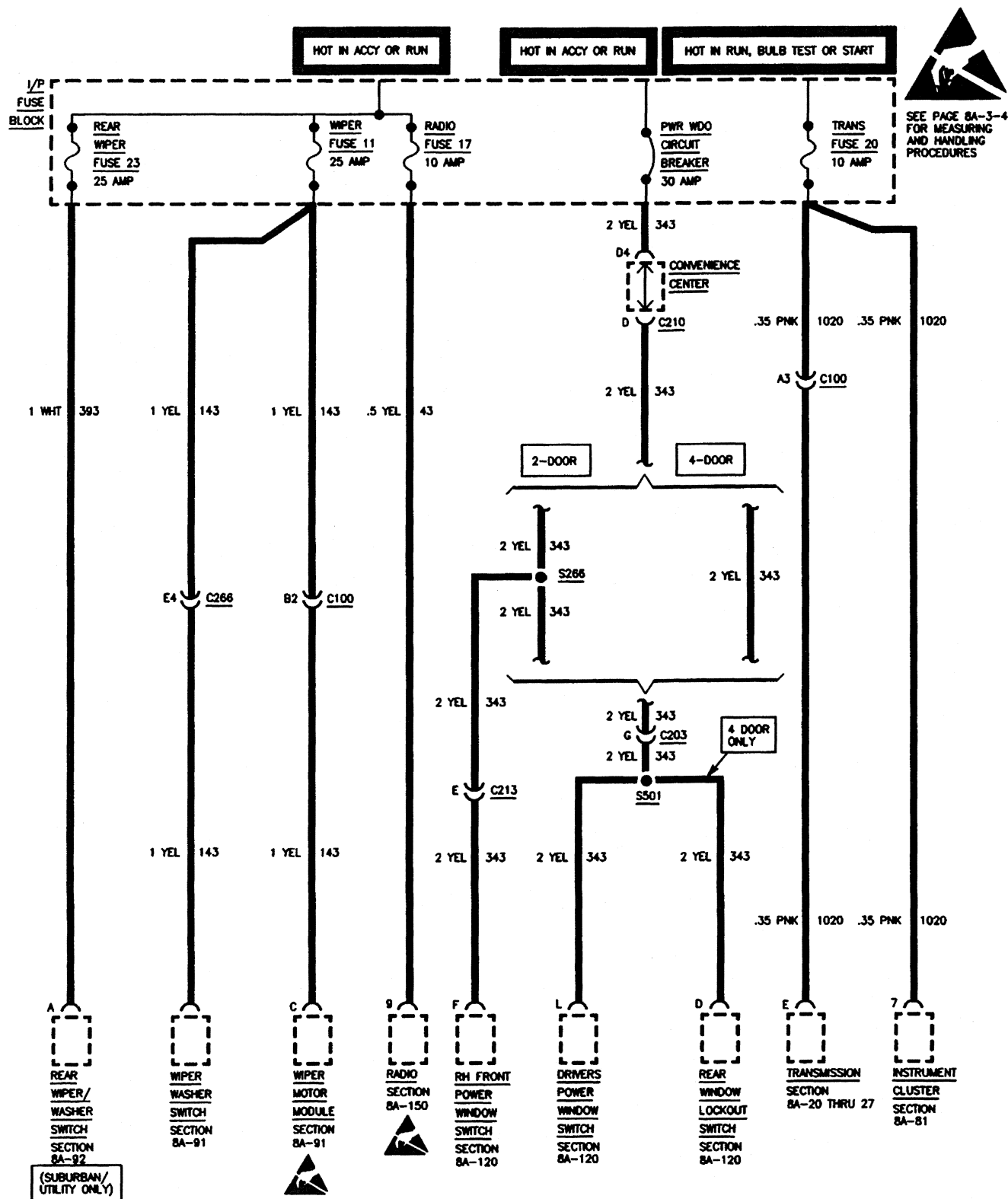
FUSE BLOCK DETAILS



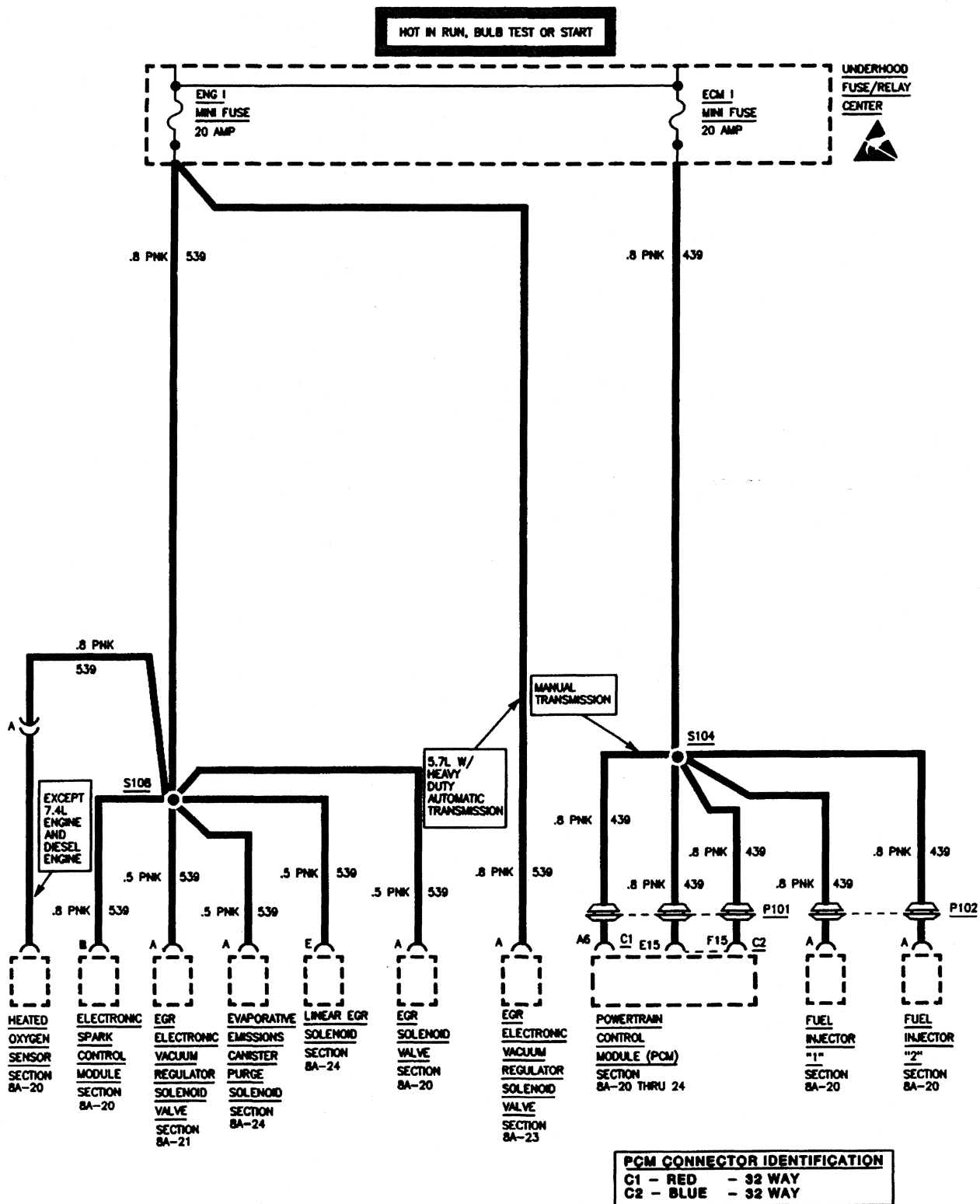
FUSE BLOCK DETAILS



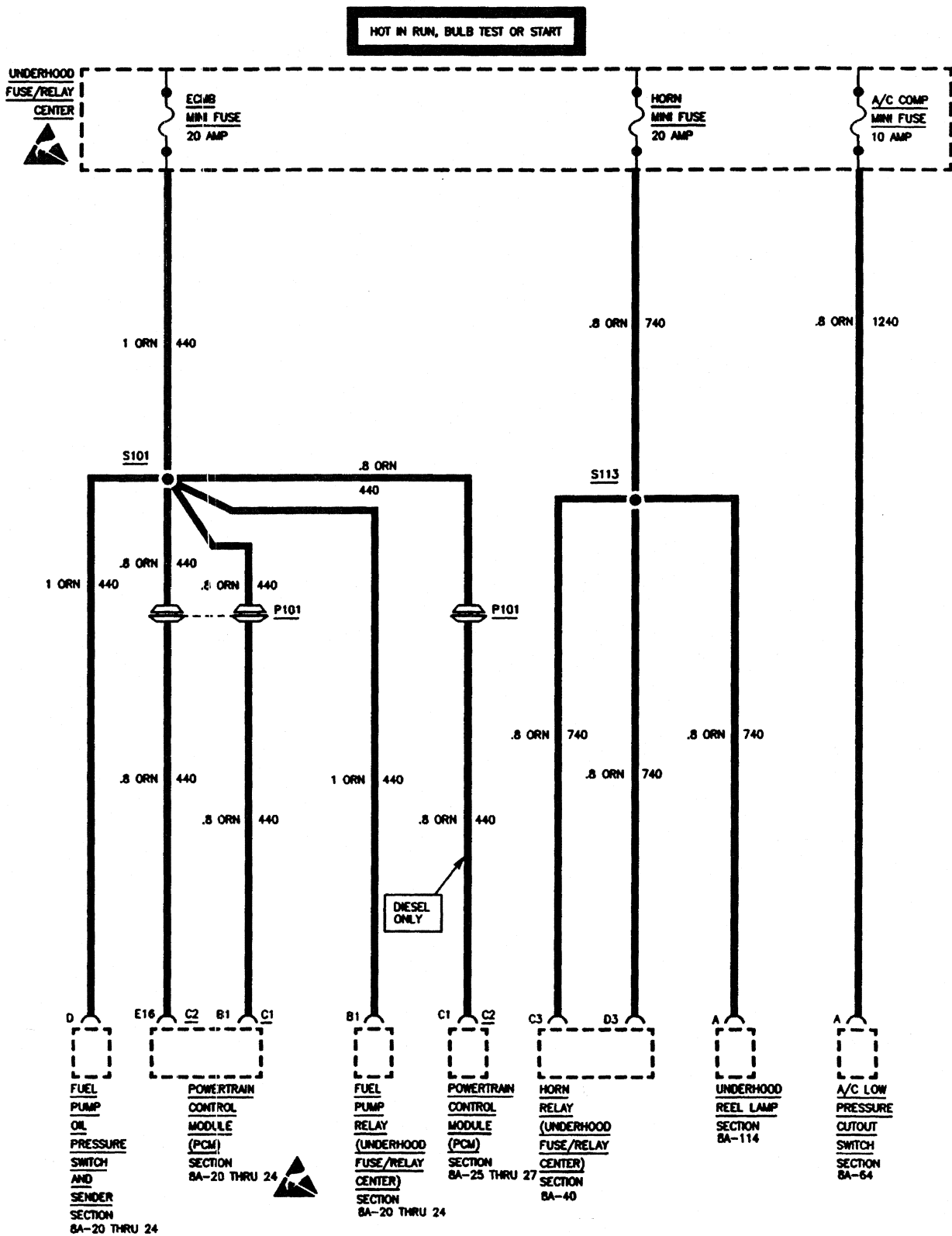
FUSE BLOCK DETAILS



FUSE BLOCK DETAILS

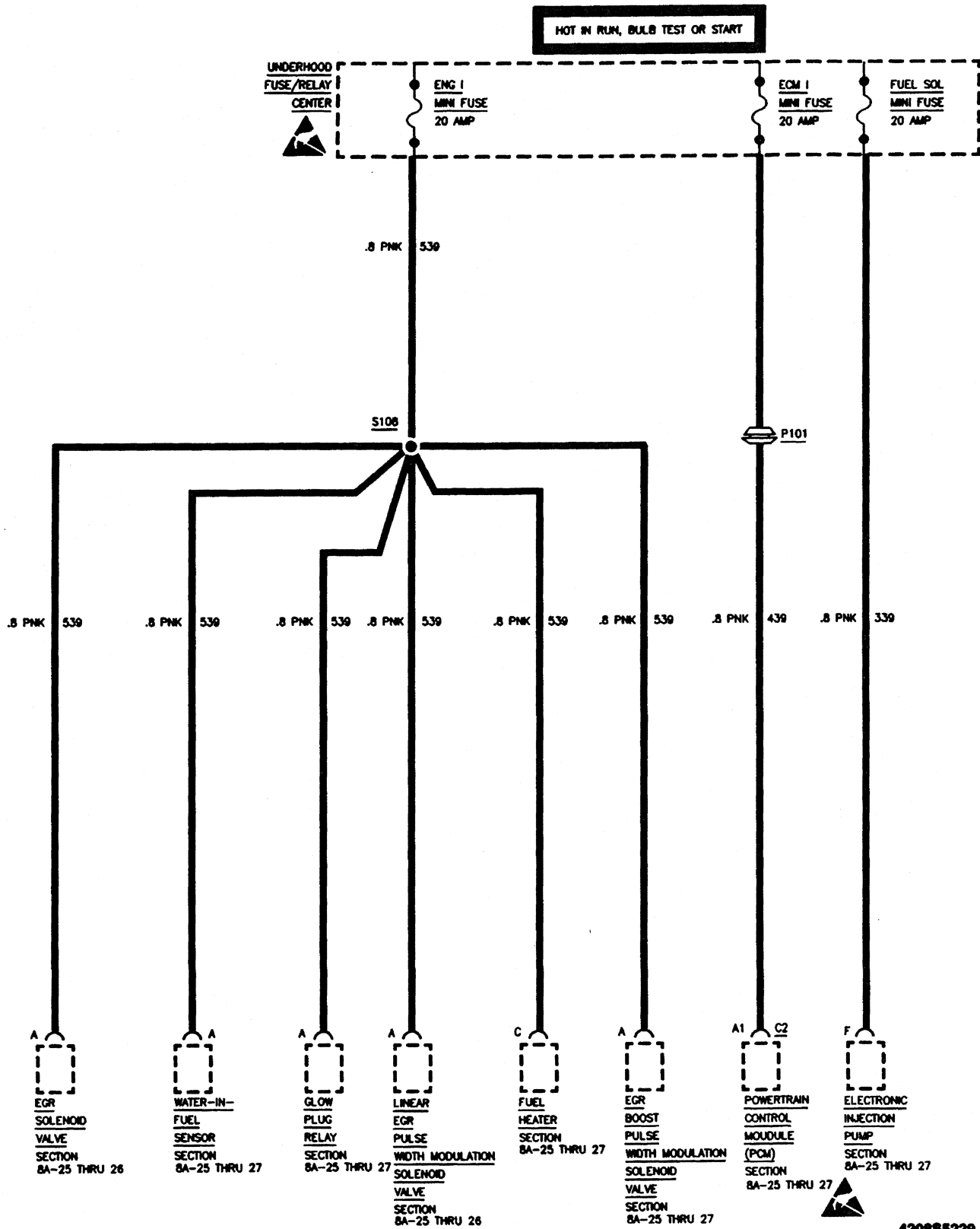


FUSE BLOCK DETAILS

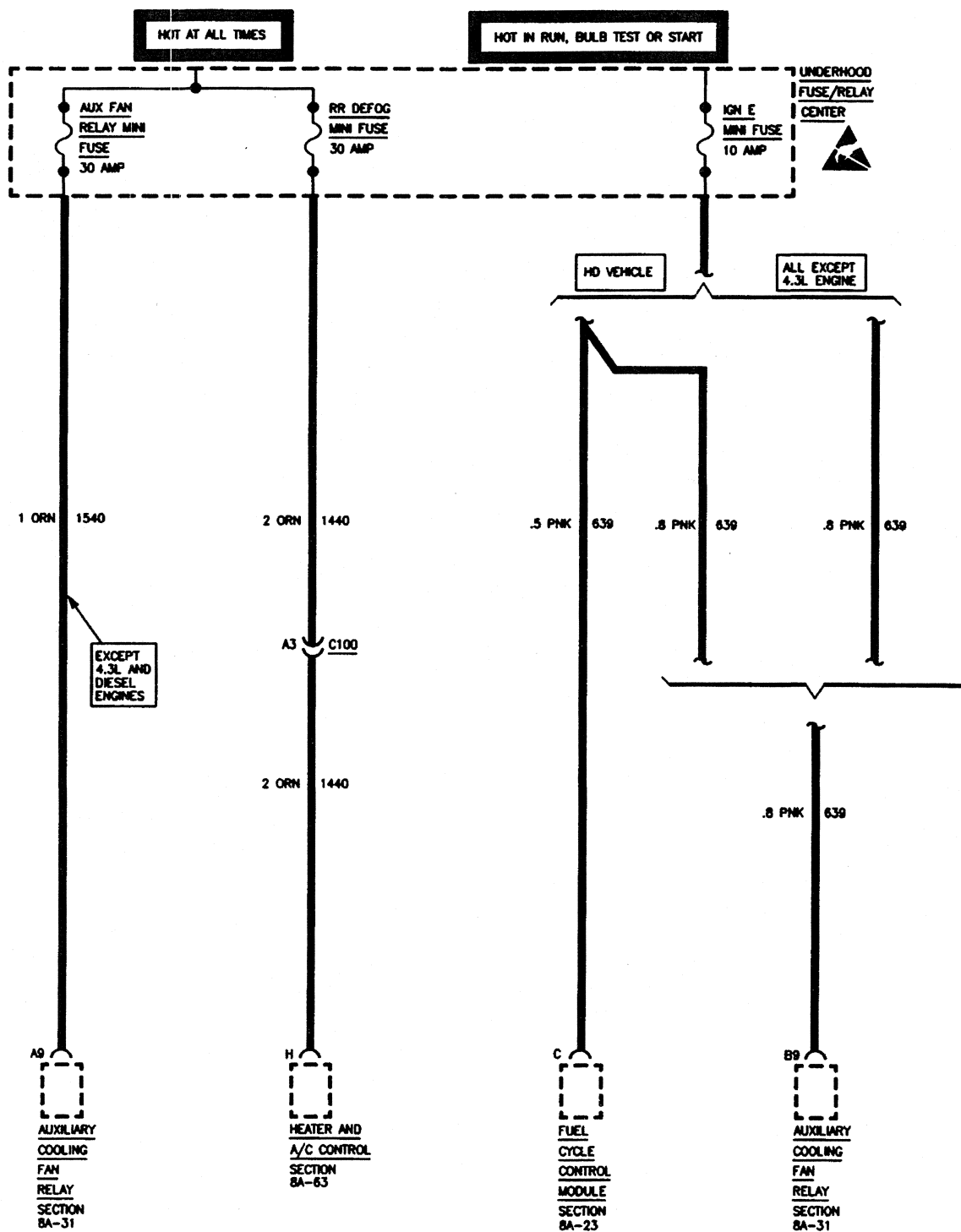


8A - 11 - 18 ELECTRICAL DIAGNOSIS

FUSE BLOCK DETAILS



FUSE BLOCK DETAILS



FUSE BLOCK DETAILS

COMPONENT	LOCATION	201-PG	FIG.	CONN
A/C Low Pressure Cutout Switch (VIN P, F, S).....	At A/C accumulator, RH rear of engine compartment			
Arming Sensor.....	Inside LH frame rail, below drivers door			
Audio Alarm Module.....	Under LH side of I/P, on convenience center (RH) portion ...	27	.....	32
Auxiliary Cooling Fan Relay	LH rear side of engine compartment			
Auxiliary Heater and A/C Logic Module	Rear of overhead console molding, in headliner			
Auxiliary Heater and A/C Control, Module (Front).....	Front of overhead console	38	.....	45
Auxiliary Heater and A/C Control, Module (Rear).....	Rear of overhead console molding, in headliner	38	.....	45
Auxiliary HVAC Mode Door Motor (Module)	On auxiliary HVAC plenum, rear of RH rear wheelhouse.			
Auxiliary Power Feed.....	C100			
Auxiliary Power Supply Socket	C496			
Auxiliary Storage Battery	LH front of engine compartment			
Backup Lamp Switch(MG5).....	LH side of transmission, below shift tower area	22	.....	25
Backup Lamp Switch (MW3)...	LH top of transmission.....	24	.....	27
Brake Pressure Modulator Valve (BPMV)	Near brake master cylinder at LH front wheelhouse	7	.....	10
Cargo Lamp.....	Rear center of cab, above rear window			
Cargo Lamp Switch	Center of I/P	35	.....	42
Cigar Lighter	Center of I/P, at ashtray			
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead.....	34	.....	41
Cruise Control Module	LH rear side of engine compartment, on bulkhead.....	25	.....	30
Cruise Control Switch	In turn signal lever			
Daytime Running Lamps (DRL) Diode Module.....	Under LH side of I/P, taped on I/P harness			
Daytime Running Lamp (DRL) Relay.....	Under LH side of I/P, on lower center portion of convenience center.....	27	.....	32
Diagnostic Energy Reserve Module (DERM).....	Behind center of I/P			
Distributor Ignition Control (DIC) Module (VIN Z).....	Center rear of engine	8	.....	11
Dome/Reading Lamp, Front.....	Inside on roof			
Dome/Reading Lamp Rear	Inside on roof.....	41	.....	50
Door Lock Relay	Under center portion of I/P, near RKE module.....	42	.....	51
Door Lock Switch, LH Front ...	On door trim panel	43	.....	52

FUSE BLOCK DETAILS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Door Lock Switch, RH Front...	On door trim panel	43	.....	52
Electrochromatic Rearview Mirror With Compass.....	On top inside of windshield.....	39	.....	46
Electronic Injection Pump	Top front of engine			
Evaporative Emissions Canister Purge Solenoid.....	RH side of engine.....	9	.....	12
Exhaust Gas Recirculation (EGR)Boost Pulse Width Modulation Solenoid Valve, VIN S.....	LH rear top of engine, above valve cover			
Exhaust Gas Recirculation (EGR)Electronic Vacuum Regulator Solenoid Valve.....	Top of engine, RH side			
Exhaust Gas Recirculation (EGR) Linear Solenoid Valve (VIN N).....	RH side of throttle body assembly.....	12	.....	15
Exhaust Gas Recirculation (EGR) Pulse Width Modulation Solenoid Valve VIN S.....	LH top rear of engine, above valve cover.			
Exhaust Gas Recirculation (EGR) Solenoid Valve (VIN Z)	RH rear top of engine, on valve cover.....	9	.....	12
Exhaust Gas Recirculation (EGR) Solenoid Valve (W/M30).....	LH rear top of engine			
Fog Lamp Relay	Under LH end of I/P, on lower LH portion of convenience center	27	.....	32
Fog Lamp Switch.....	Center of I/P area.....	35	.....	42
Four-Wheel Drive Indicator Lamp.....	Center floor console.....	37	.....	44
Fuel Cycle Control Module.....	Behind RH side of I/P, near PCM			
Fuel Heater Heater (Diesel).....	Top rear of engine.....	14	.....	17
Fuel Injector (VIN N).....	In throttle body assembly	12	.....	15
Fuel Injector (VIN Z).....	In throttle body assembly	9	.....	12
Fuel Pump Oil Pressure Switch. & Sender (VIN Z)....	Rear of engine, near distributor shaft.....	8	.....	11
Fuel Pump Oil Pressure Switch & Sender (VIN H, K).....	Rear top center of engine, behind distributor	11	.....	14
Fuel Pump Oil Pressure Switch & Sender (VIN N)	LH lower front of engine, near damper pulley	12	.....	15
Fuel Pump Oil Pressure Switch & Sender (VIN P, F S).....	LH rear of engine, at 2 o'clock position			

FUSE BLOCK DETAILS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Fuel Pump Relay	In underhood fuse and relay center			
Hazard Flasher.....	Under LH side of I/P, on lower RH portion of convenience center	27	.....	32
Headlamp (Off/On) & Panel Dimmer Switch.....	Upper LH side of I/P	26	.....	31
Heated Oxygen Sensor	At Y connection of exhaust pipe			
Heater and A/C Control Module	Center of I/P at heater control			
High Blower Relay	Under I/P, on top of HVAC plenum	36	.....	43
Horn Relay	On convenience center			
I/P Cluster Connector	LH side of I/P above steering column.....	26	.....	31
I/P Compartment Box Lamp.....	In I/P compartment box			
I/P Fuse Block	Lower LH side of I/P			
Linear Exhaust Gas Recirculation (EGR) Solenoid	LH top rear of engine, above valve cover			
Low Blower Relay, Rear.....	On auxiliary heater and A/C module	47	.....	56
Medium Blower Relay, Rear.....	On auxiliary heater and A/C module	47	.....	56
Mode Door Motor (Module).....	Under I/P, on heater-A/C plenum, LH side	36	.....	43
Power Amplifier Relay	Under I/P, RH side of brake pedal bracket			
Powertrain Control Module (PCM).....	Under RH end of I/P, above blower motor	29	.....	34
Radio Receiver.....	Behind center of I/P.....	35	.....	42
Rear Dome/Reading Lamps.....	Rear inside roof area	41	.....	50
Rear Window Lockout Switch..	LH front door, forward portion of arm rest area	43	.....	52
Rear Window Release Switch...	LH side of I/P			
Rear Window Wiper/Washer Switch.....	Center of I/P	35	.....	42
Recirculation Door Motor	Under I/P, on heater-A/C case			
Remote Keyless Entry Module.	Under center portion of I/P			
TCC/Stoplamp Switch	Top of brake pedal.....	34	.....	39
Temperature Door Motor (Module),Front	Under I/P, on heater-A/C plenum, center area.....	36	.....	43
Turn Signal Flasher.....	Behind RH center of I/P	32	.....	38
Transfer Case Shift Illumination Lamp	At transfer case selector lever.....	37	.....	44
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5	.....	8
Underhood Reel Lamp Connector	RH rear side of engine compartment, near A/C accumulator			
Vehicle Speed Sensor Buffer.....	Under RH end of I/P.....	30	.....	35

FUSE BLOCK DETAILS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Water-in-Fuel Sensor (Diesel) ...	Top rear of engine.....	15	.....	18
Windshield Wiper Motor Module.....	Center rear engine compartment, at cowl			
Windshield Wiper/Washer Switch.....	Part of multi-function switch, LH upper steering column			
Window Switch, LH Front.....	On LH trim panel	44	.....	53
Window Switch RH Front.....	On RH trim panel	44	.....	53
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7	.....	10
C111	LH rear of engine compartment near fuse relay center.....	4	.....	7
C200.....	Under RH side of I/P, near blower motor	30	.....	35
C203.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28	.....	33
C206.....	Inside LH "A" pillar, lower portion	43	.....	52
C209.....	Inside LH "A" pillar, lower portion	43	.....	52
C210.....	At convenience center.....	27	.....	32
C212.....	Under driver's seat			
C213.....	Inside RH "A" pillar, lower portion	43	.....	53
C215.....	Inside RH "A" pillar, lower portion	43	.....	53
C218.....	At convenience center.....	39	.....	46
C230.....	Behind RH side of I/P, above HVAC evaporator housing.....	31	.....	37
C266.....	LH side of steering column, near bulkhead.....	26	.....	31
C298.....	Behind LH side of I/P, near convenience center.....	27	.....	32
C300.....	In overhead console			
C301.....	LH front kick panel	34	.....	41
C302.....	LH front kick panel	34	.....	41
C304.....	Under driver's seat			
C305.....	In headliner at #1 roof bow			
C401.....	RH rear of vehicle, above auxiliary blower motor			
C498.....	LH "B" Pillar	46	.....	55
GROMMETS:				
P100	LH rear of engine compartment at bulkhead.....	7	.....	10
P101	RH rear of engine compartment, at bulkhead			
P102	Engine compartment, on throttle body			
PLICES:				
S101(VIN F).....	Engine harness, 10 cm from generator breakout			
S101 (VIN P).....	Engine harness, 10 cm from generator breakout			

FUSE BLOCK DETAILS

201-PG FIG. CONN

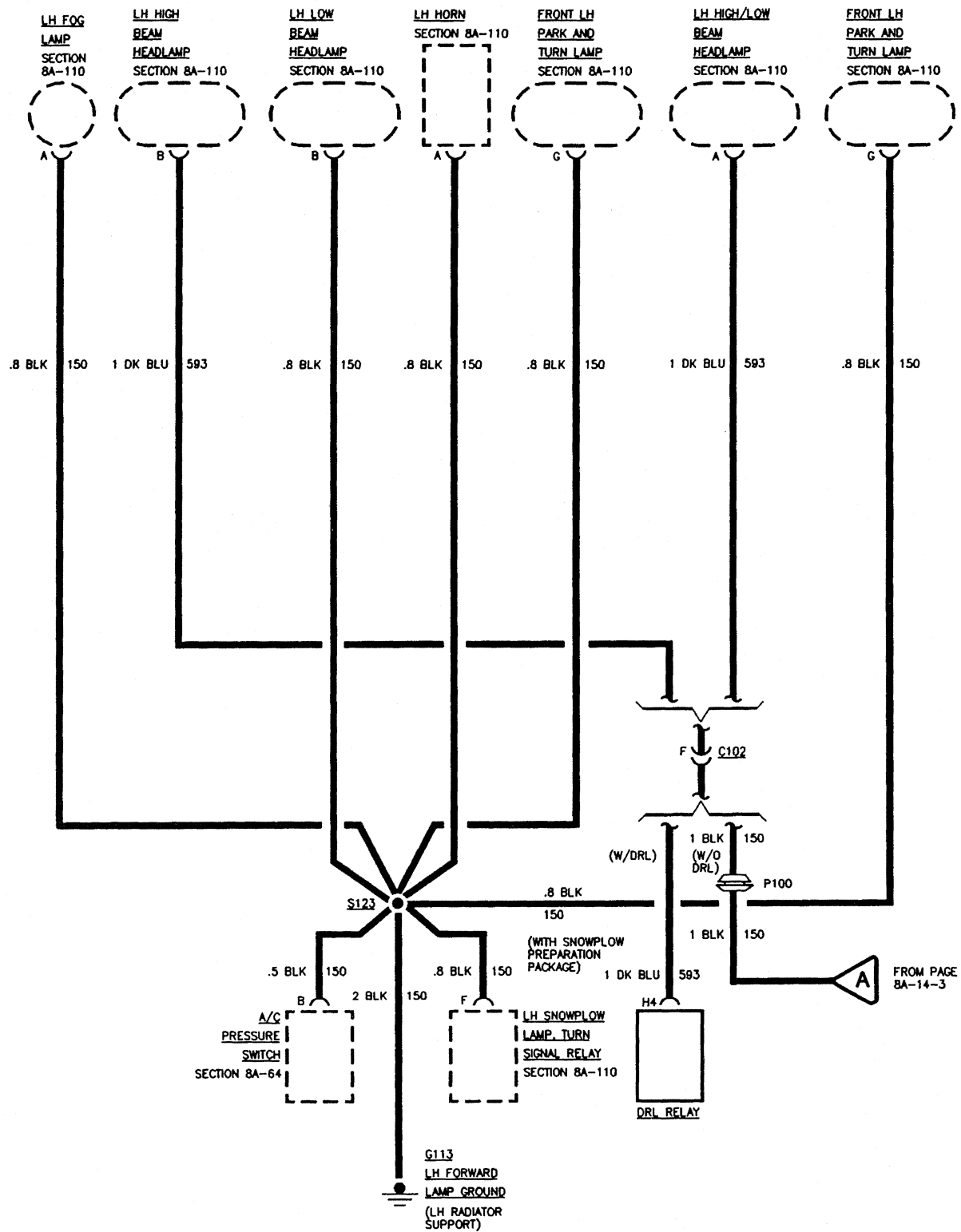
COMPONENT	LOCATION
S101 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from under hood lamp connector breakout
S104 (VIN Z, H, K, N)	In generator breakout, approx. 16 cm from main engine harness
S108 (VIN F)	Engine harness, 5 cm from generator breakout
S113 (VIN F)	Engine harness, 10 cm into underhood fuse/relay center breakout
S113 (VIN P)	Engine harness, 10 cm into underhood fuse/relay center breakout
S113 (VIN S)	Engine harness, 10 cm into underhood fuse/relay center breakout
S113 (VIN Z, H, K, N)	Engine harness, approx. 10 cm into underhood power distribution center breakout
S217	I/P harness, approx. 12 cm right of fuse block breakout
S217 (Crew Cab, VIN F)	I/P harness approx. 12 cm right of breakout for LH door jamb switch
S228	I/P harness, approx. 4 cm left of C200 connector breakout
S234	I/P harness, approx. 9 cm left of cruise control harness breakout
S235	I/P harness, approx. 8 cm left of cruise control harness breakout
S242	I/P harness, approx. 8 cm right of fuse block breakout
S243	HVAC harness, 4 cm from recirc door breakout
S248	Crossbody harness, 6 cm into LH door breakout
S251 (Suburban) (base only)	Crossbody harness, 8 cm right of LH door breakout
S251 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 6 cm left of LH seat breakout
S251 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 6 cm left of LH seat breakout
S253 (Suburban)	Crossbody harness, 4 cm left of I/P harness breakout
S255 (Suburban/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 12 cm right of I/P harness breakout
S256	Crossbody harness, 21 cm right of I/P harness breakout
S264	I/P harness, approx. 16 cm right of I/P cluster connector
S266 (Utility/Pickup/Extended Cab)	Crossbody harness, 6 cm right of I/P harness breakout
S300	Inside power lumbar seat jumper
S308 (Suburban)	Rear HVAC control harness, 5 cm rear of HVAC logic module breakout
S310 (Suburban)	Front to rear body harness, 6 cm from front dome lamp breakout

FUSE BLOCK DETAILS

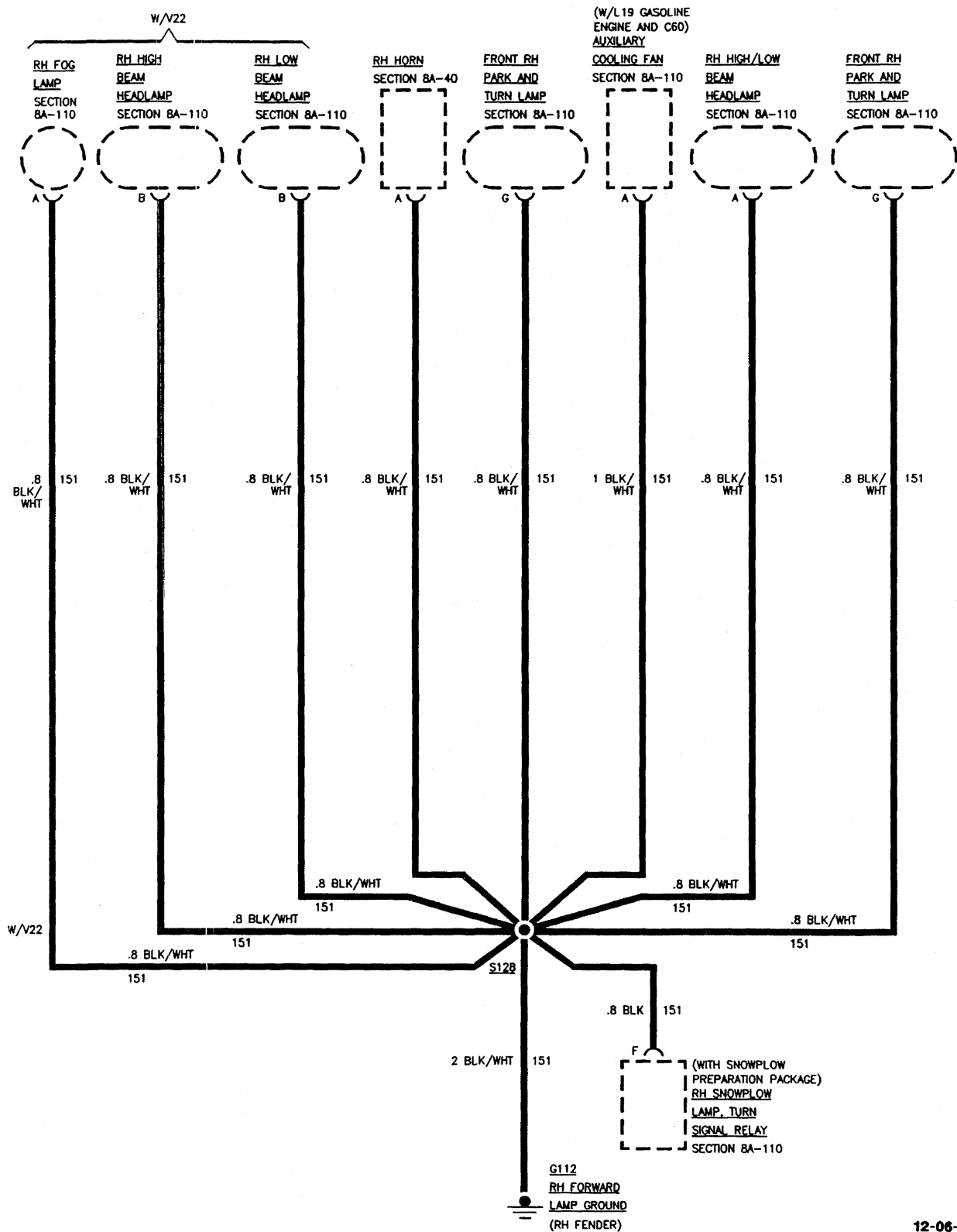
COMPONENT	LOCATION	201-PG	FIG.	CONN
S312	In vanity mirror jumper			
S400 (Rear A/C)	Rear A/C harness, 17 cm from blower motor relays			
S400 (Rear Heat & A/C)	Rear heat and A/C harness, 7 cm from blower motor relays breakout			
S426 (4-Door utility)	Front to rear body harness, 12 cm from rear dome lamp breakout			
S426 (Suburban)	Front to rear body harness, 41 cm from rear dome lamp breakout			
S501	Inside left front door harness, near tweeter	43	.....	52

8A - 14 - 0 ELECTRICAL DIAGNOSIS

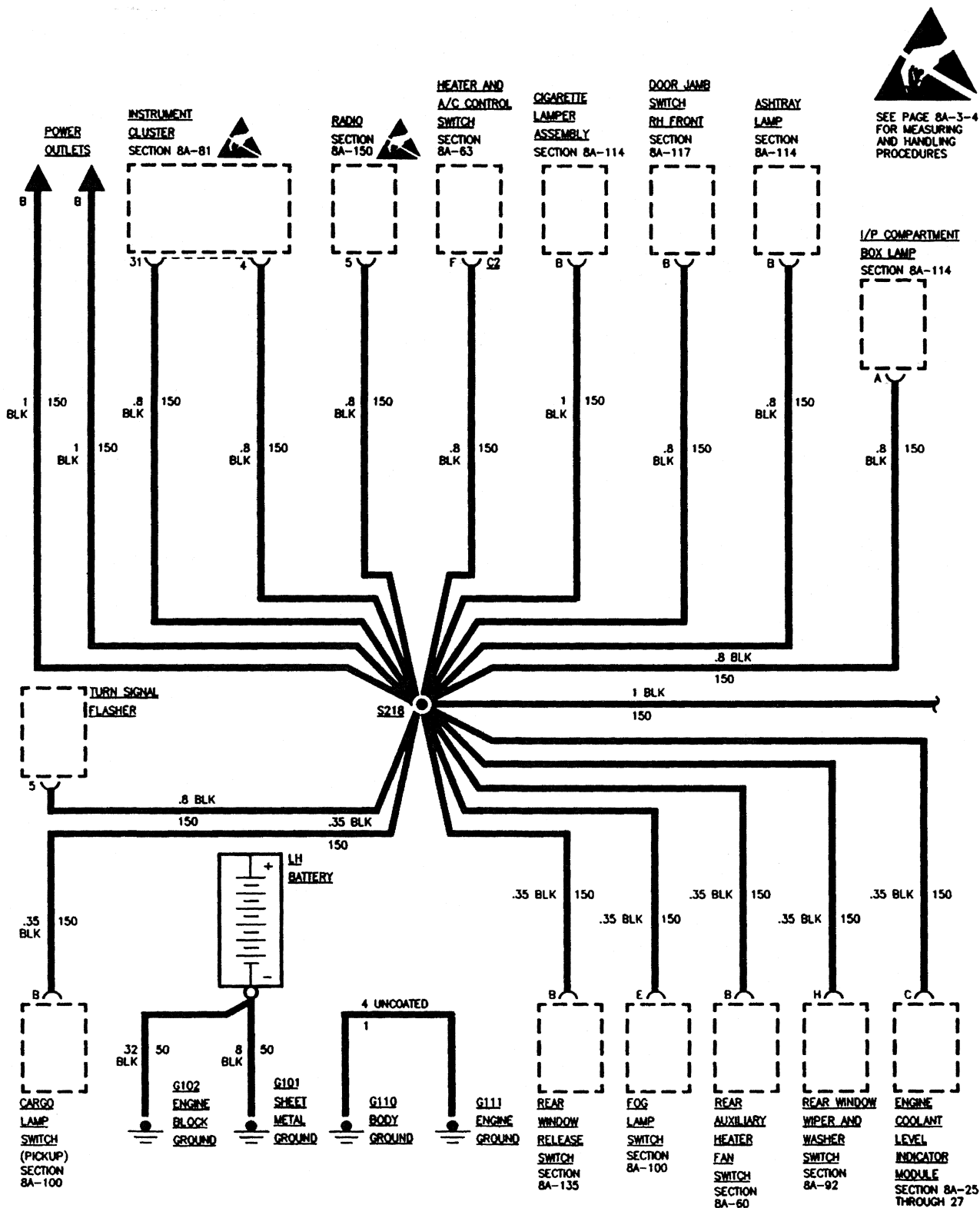
GROUND DISTRIBUTION



GROUND DISTRIBUTION



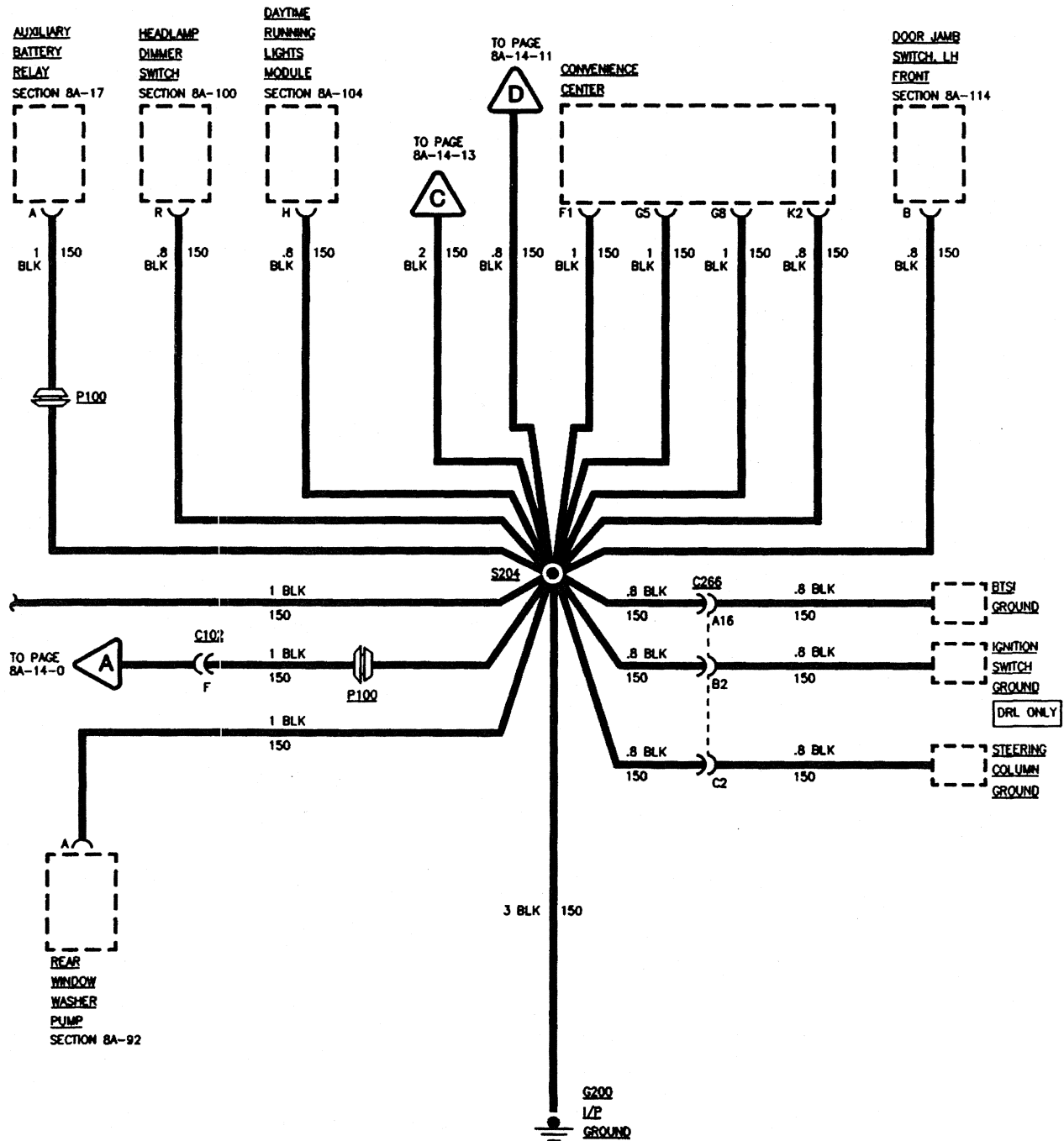
GROUND DISTRIBUTION



GROUND DISTRIBUTION

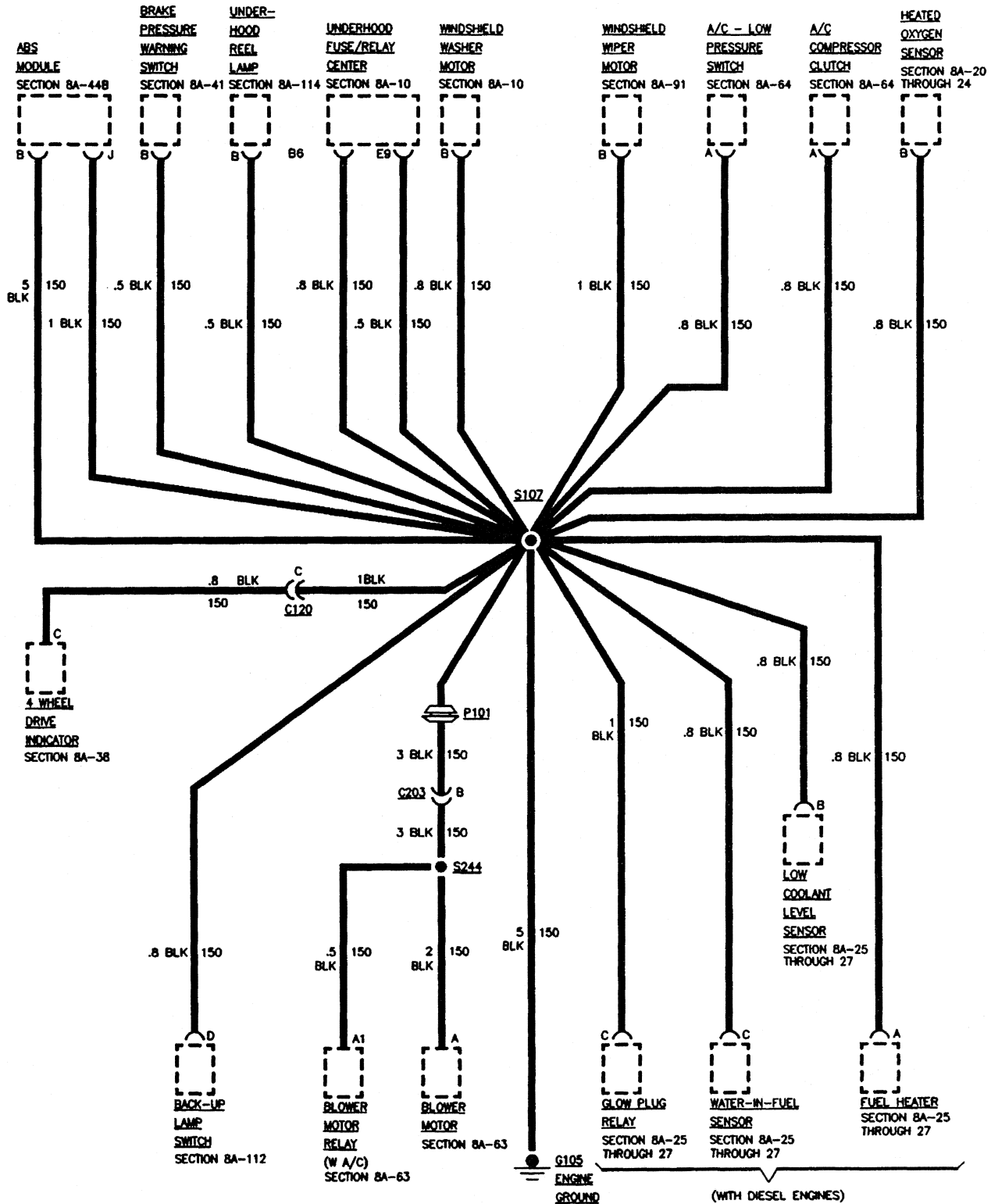


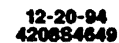
SEE PAGE 8A-3-4
FOR MEASURING
AND HANDLING
PROCEDURES



8A - 14 - 4 ELECTRICAL DIAGNOSIS

GROUND DISTRIBUTION

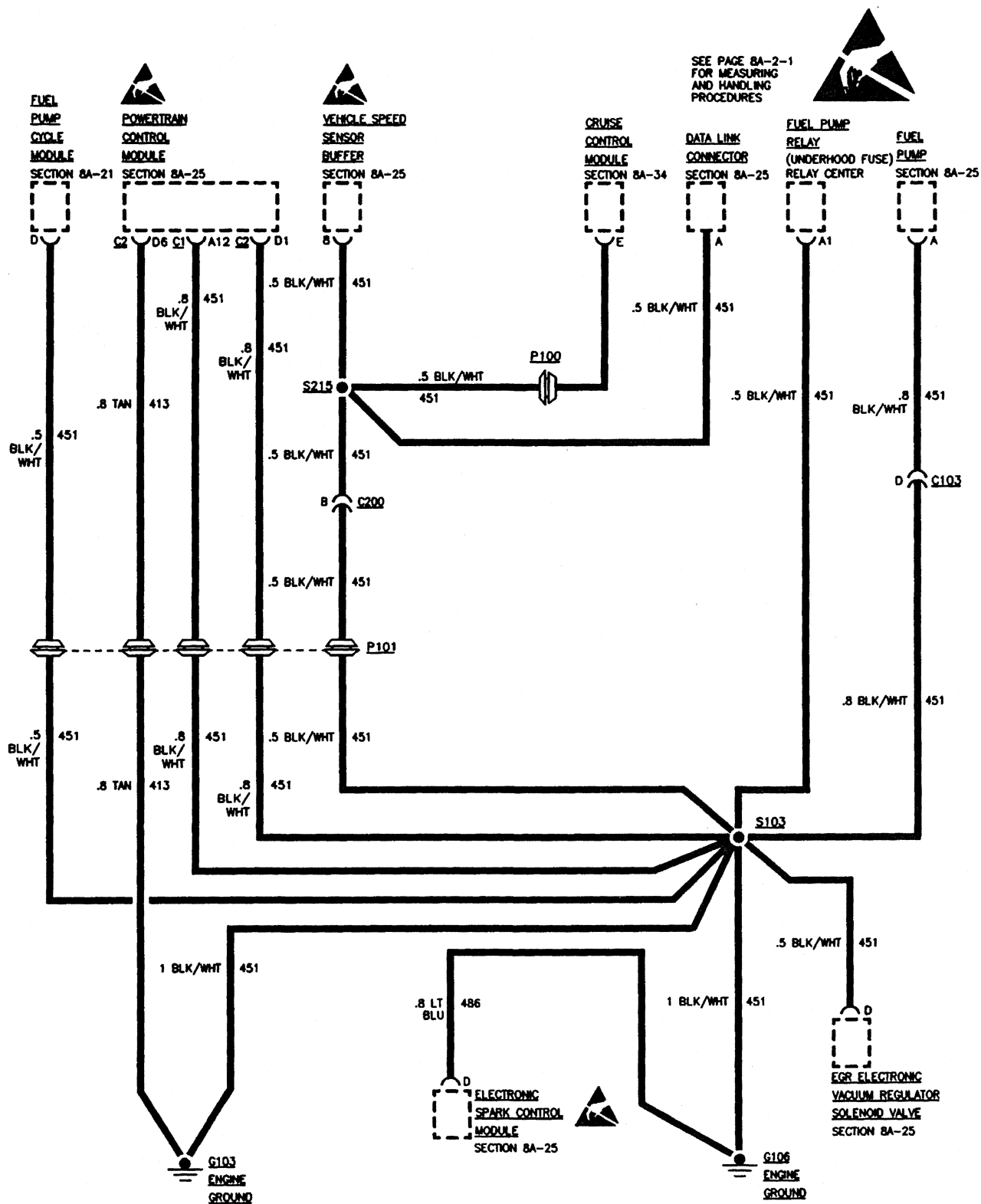


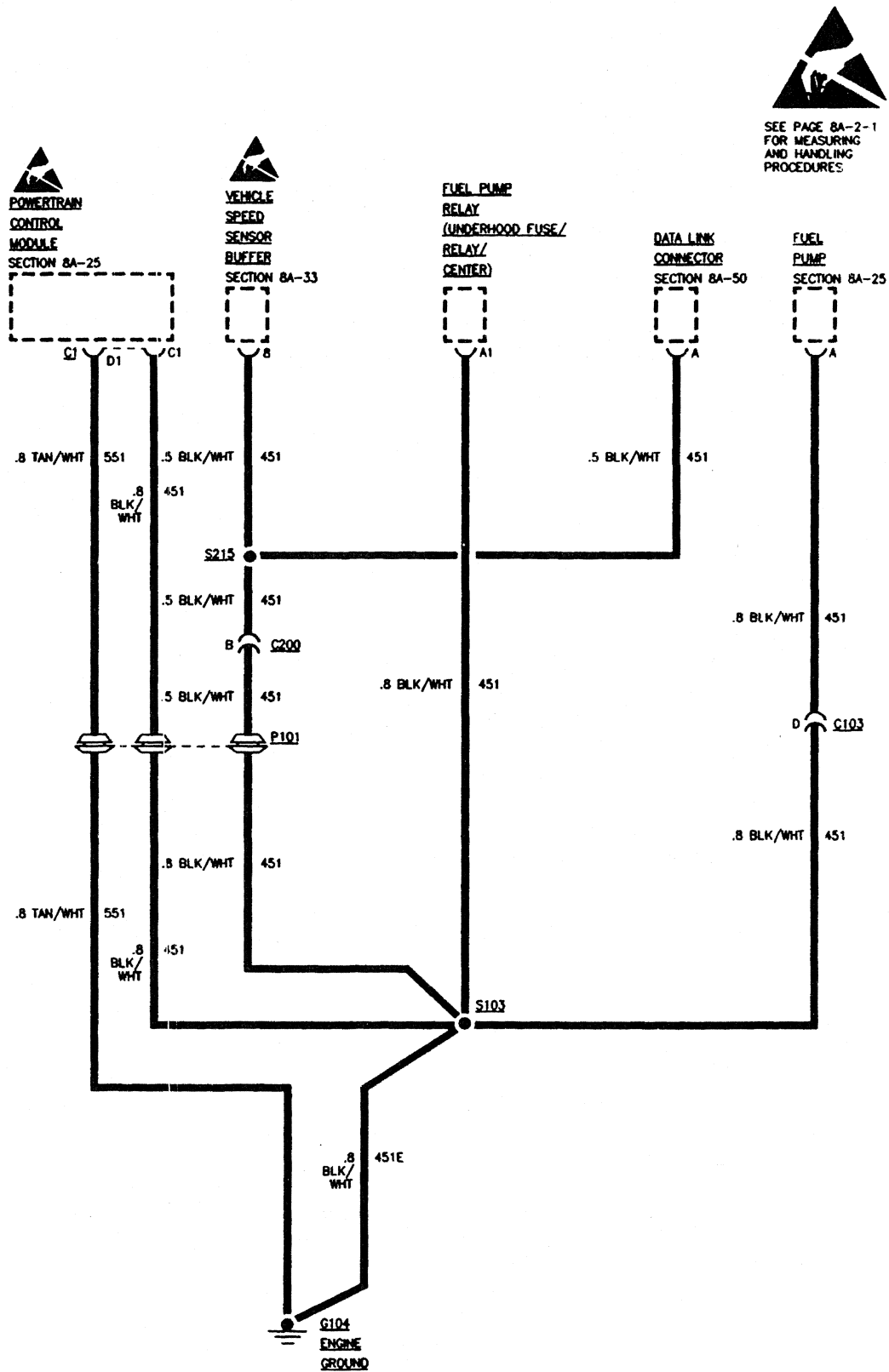


8A - 14 - 6 ELECTRICAL DIAGNOSIS

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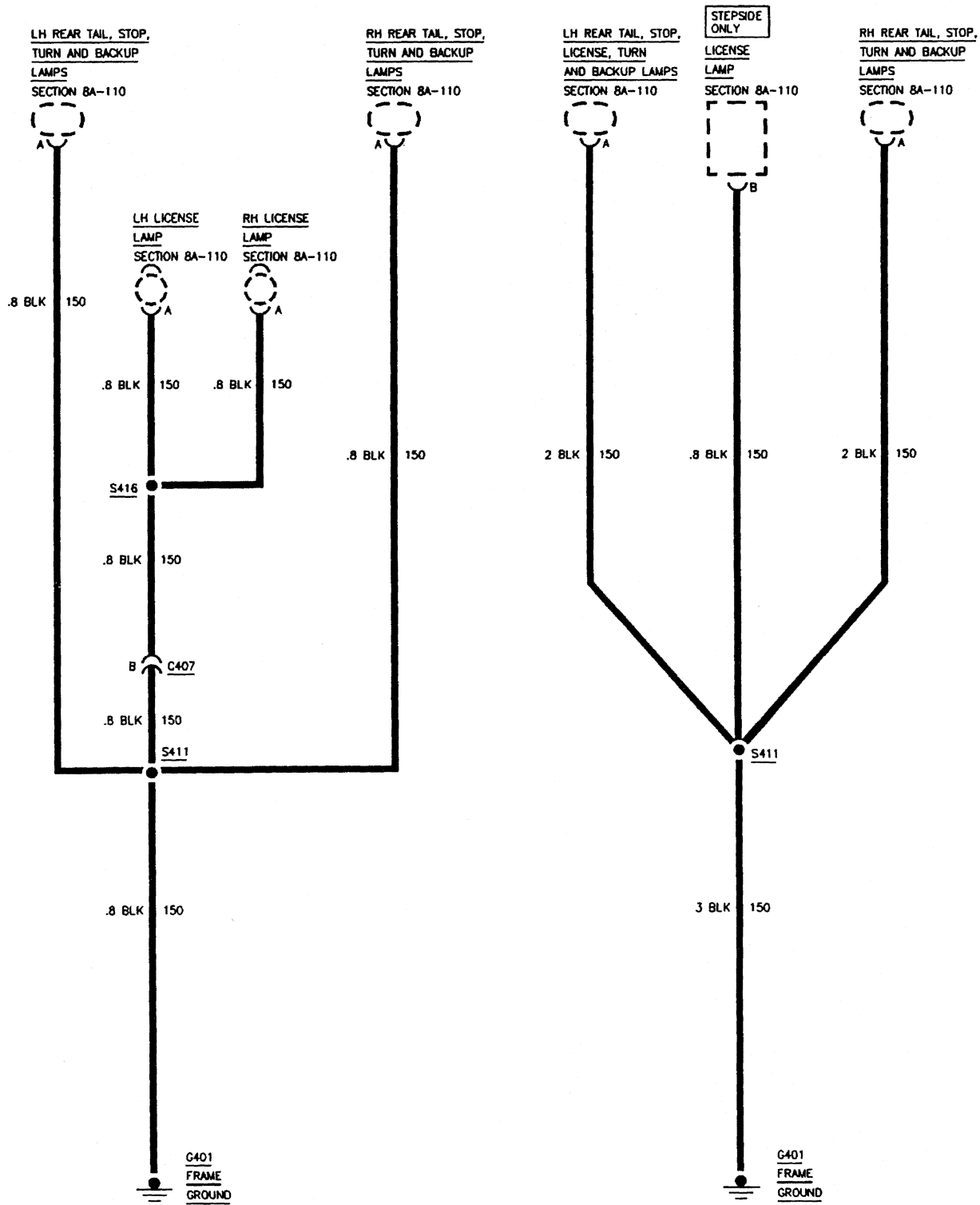
L03, L05 GAS ENGINES W/MAN TRANS



**GROUND DISTRIBUTION
ALL DIESEL ENGINES**

8A - 14 - 8 ELECTRICAL DIAGNOSIS

GROUND DISTRIBUTION

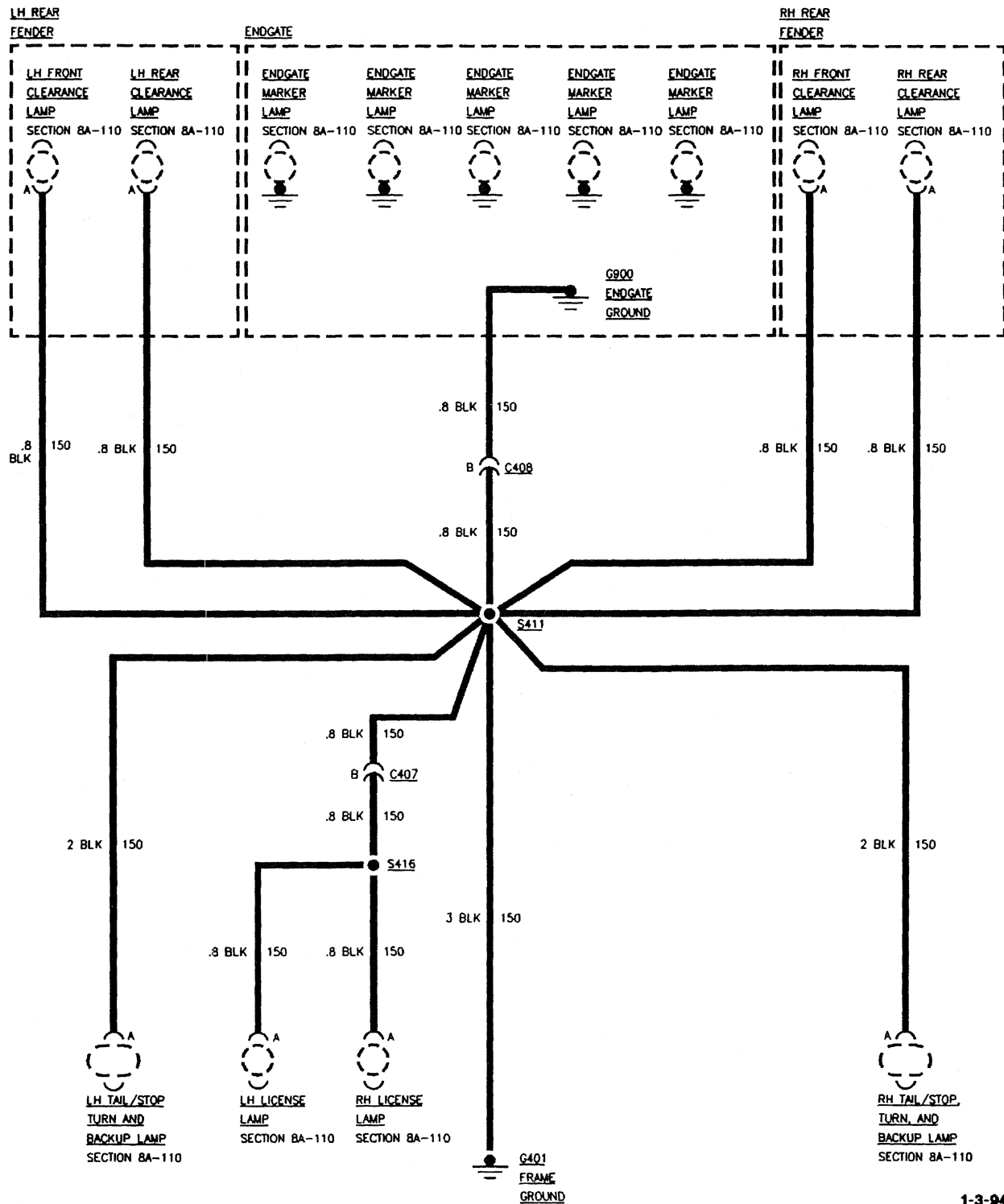


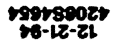
(PICKUP (W/O RO5), SUBURBAN AND UTILITY)

(CHASSIS CAB & STEP SIDE)

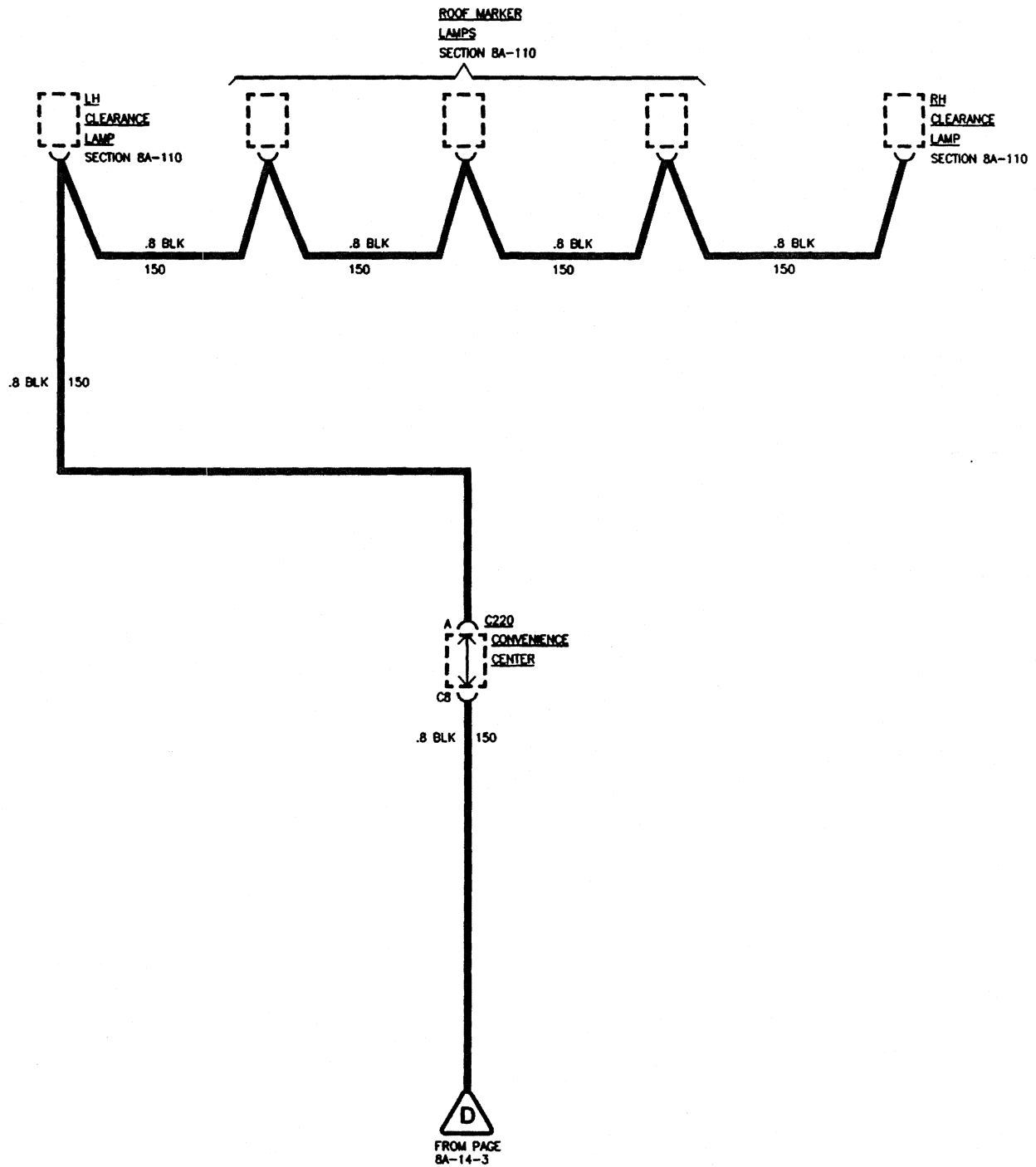
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GROUND DISTRIBUTION PICKUP W/DUAL REAR WHEELS

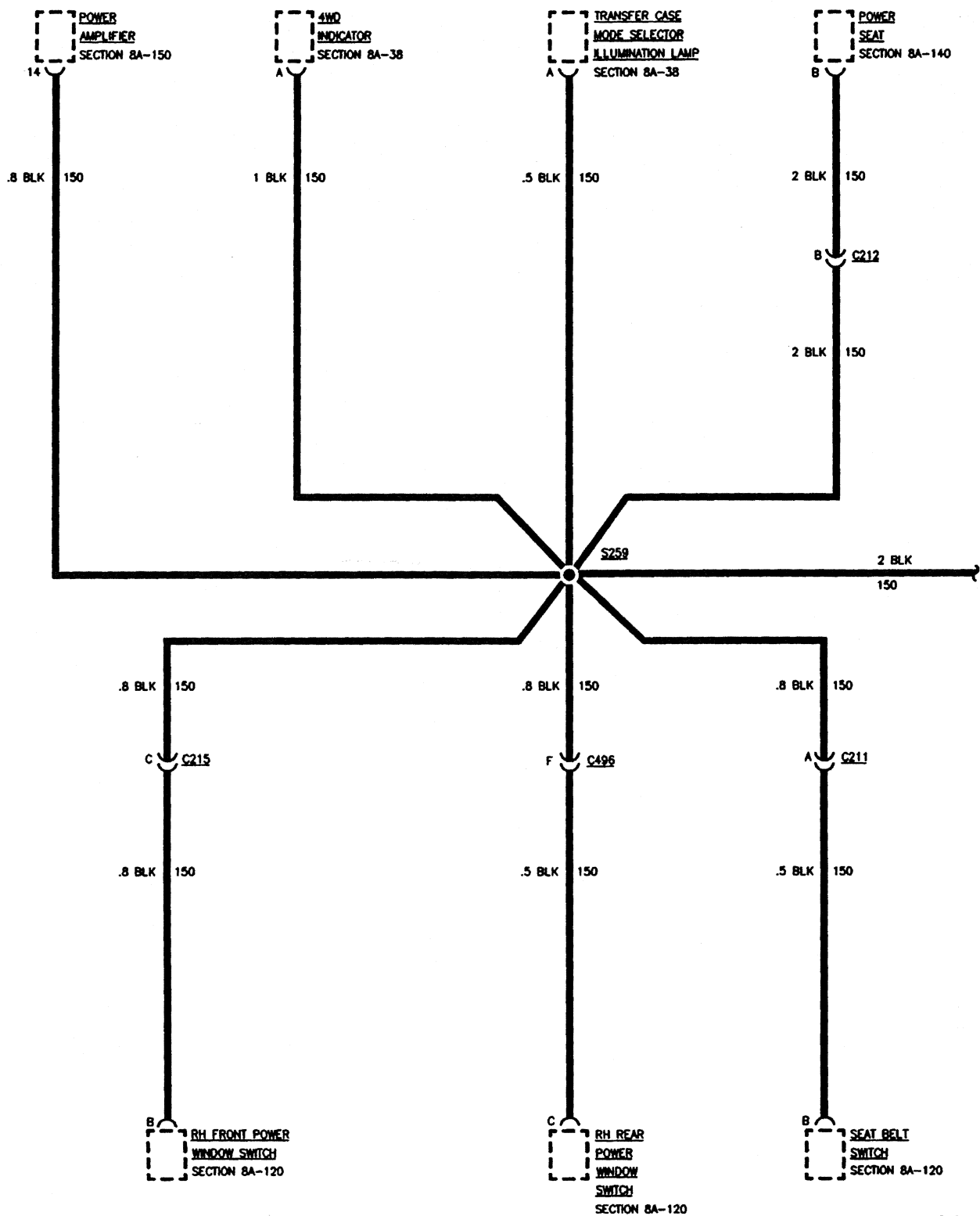




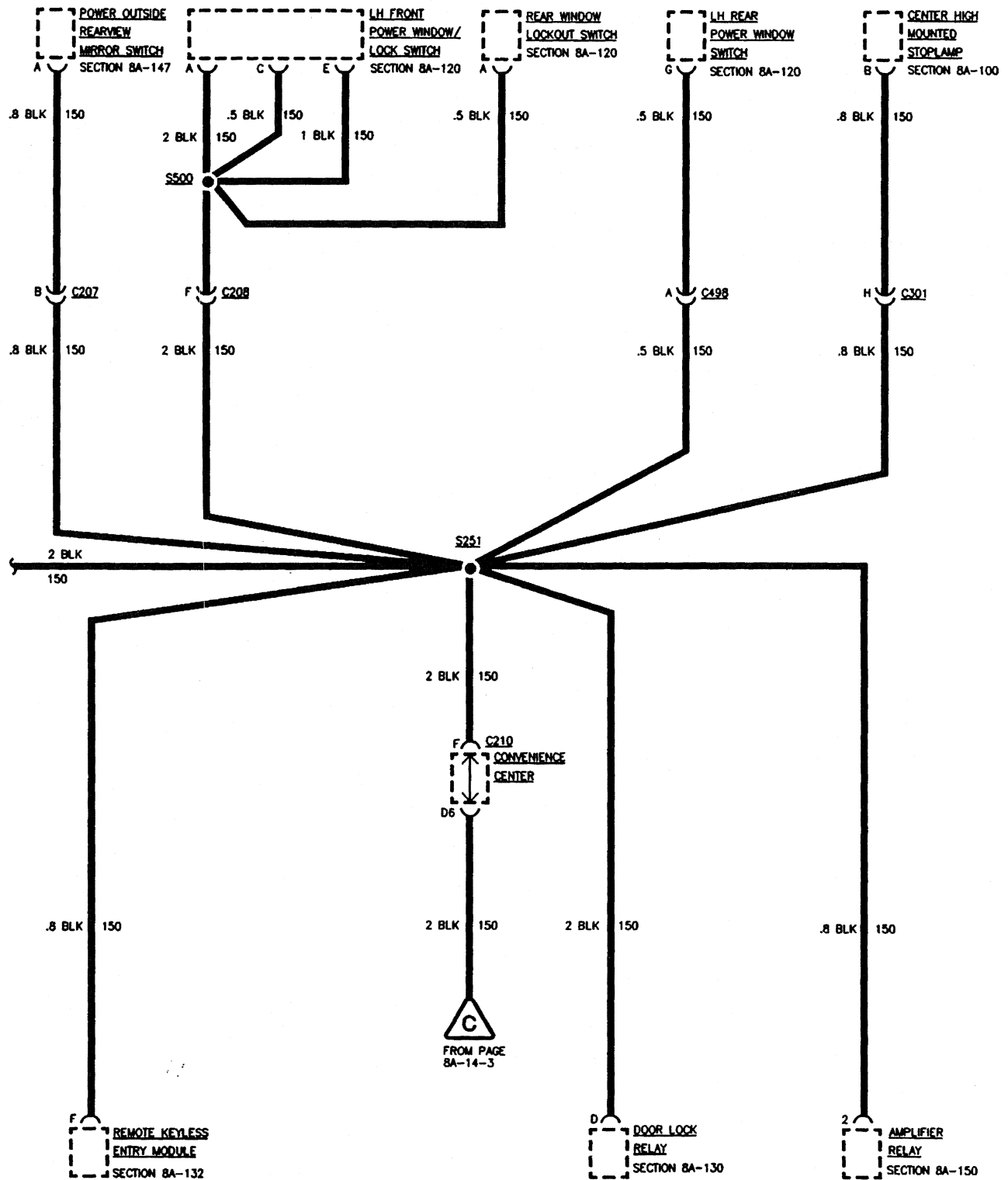
GROUND DISTRIBUTION



GROUND DISTRIBUTION



GROUND DISTRIBUTION



GROUND DISTRIBUTION

COMPONENT	LOCATION	201-PG	FIG.	CONN
A/C Compressor.....	RH front of engine			
A/C High Pressure Cutout Switch (VIN F, S).....	On rear portion of A/C compressor			
A/C High Pressure Cutout Switch (VIN H, K)	Rear of compressor			
A/C High Pressure Cutout Switch (VIN P).....	On rear portion of A/C compressor			
A/C Low Pressure Cutout Switch (VIN P, F, S).....	At A/C accumulator, RH rear of engine compartment			
Ashtray Lamp.....	Behind I/P, at ashtray			
Auxiliary Battery Relay.....	LH rear of engine compartment, at fender, next to relay center	5	8	
Auxiliary Cooling Fan A/C Pressure Switch.....	Front of engine compartment, on condenser manifold tubing			
Auxiliary Heater and A/C Controls, Front.....	Front of overhead console	38	45	
Auxiliary Heater and A/C Logic Module	Rear of overhead console molding, in headliner			
Auxiliary Heater and A/C Controls, Rear.....	Rear of overhead console molding, in headliner.....	38	45	
Backup Lamp Switch (MG5)....	LH side of transmission, below shift tower area	22	25	
Backup Lamp Switch (MW3)...	LH top of transmission.....	24	27	
Battery.....	RH front of engine compartment.....	1	3	
Blower Motor.....	Under RH side of I/P	36	43	
Blower Motor, Rear	Behind RH rear wheelwell			
Brake Pressure Modulator Valve (BPMV)	Near brake master cylinder, at LH front wheelhouse	7	10	
Brake Pressure Warning Switch	On rear of Brake Pressure Modulator Valve (BPMV) casting			
Brake/Transmission Shift Interlock (BTSI) Solenoid.....	RH side of steering column, under support bracket			
Cargo Door Defogger Grid, LH Rear	On LH rear cargo door glass			
Cargo Door Defogger Grid, RH Rear	On RH rear cargo door glass			
Cargo Lamp Switch	Center of I/P	35	42	
Center High Mount Stoplamp (CHMSL) - Pickup.....	Back, top of cab			
Center High Mount Stoplamp (CHMSL) - Suburban, Utility	At top rear center of vehicle			
Center High Mount Stoplamp Relay (Pickup)	On RH cowl, in engine compartment			

GROUND DISTRIBUTION

COMPONENT	LOCATION	201-PG	FIG.	CONN
Cigar Lighter	Center of I/P, at ashtray			
Clearance Lamp Front, LH	Front of LH rear fender.....	49	59	
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	41	
Cruise Control Module	LH rear side of engine compartment, on bulkhead.....	25	30	
Data Link Connector (DLC)	Under LH side of I/P.....	30	36	
Door Lock Relay.....	Under center portion of I/P, near RKE module.....	42	51	
Daytime Running Lamp (DRL) Relay.....	Under LH side of I/P, on lower center portion of convenience center.....	27	32	
Daytime Running Lamps (DRL) Module	Under LH side of I/P, taped on I/P harness			
Diagnostic Energy Reserve Module (DERM).....	Behind center of I/P			
Diagnostic Energy Reserve Module (DERM) Connector ..	Behind center of I/P			
Door Jamb Switch, LH Front ...	At LH end of I/P			
Electronic Vacuum Regulator Solenoid Valve, 5.7L w/MT1	Top RH side of engine, above valve cover			
Endgate Clearance Lamps	On rear of endgate	52	63	
Fog Lamp Switch.....	Center of I/P area.....	35	42	
Fuel Cycle Control Module.....	Behind RH side of I/P, near PCM			
Fuel Heater (Diesel).....	Top rear of engine.....	14	17	
Fog Lamp, LH	At LH lower end of front bumper.....	0		
Four-Wheel Drive Indicator Lamp.....	Center floor console.....	37	44	
Fuel Lift Pump (Diesel)	Inside LH frame rail, below driver's door			
Fuel Pump Relay.....	In underhood fuse and relay center			
Headlamp Dimmer Switch.....	Lower LH side of steering column			
Headlamp, High/Low Beam, LH.....	LH front of vehicle			
Heated Oxygen Sensor.....	At Y connection of exhaust pipe			
High Blower Relay, Rear (auxiliary HVAC).....	On auxiliary HVAC plenum, forward of LH rear wheelhouse	47	56	
Horn	At front of vehicle	3	6	
HVAC Controls Connector	Center of I/P			
I/P Compartment Box Lamp.....	In I/P compartment box			
Ignition Switch	Under I/P, on steering column			
Instrument Cluster	LH upper end of I/P			
License Lamps.....	Rear of vehicle at license holder	53	64	

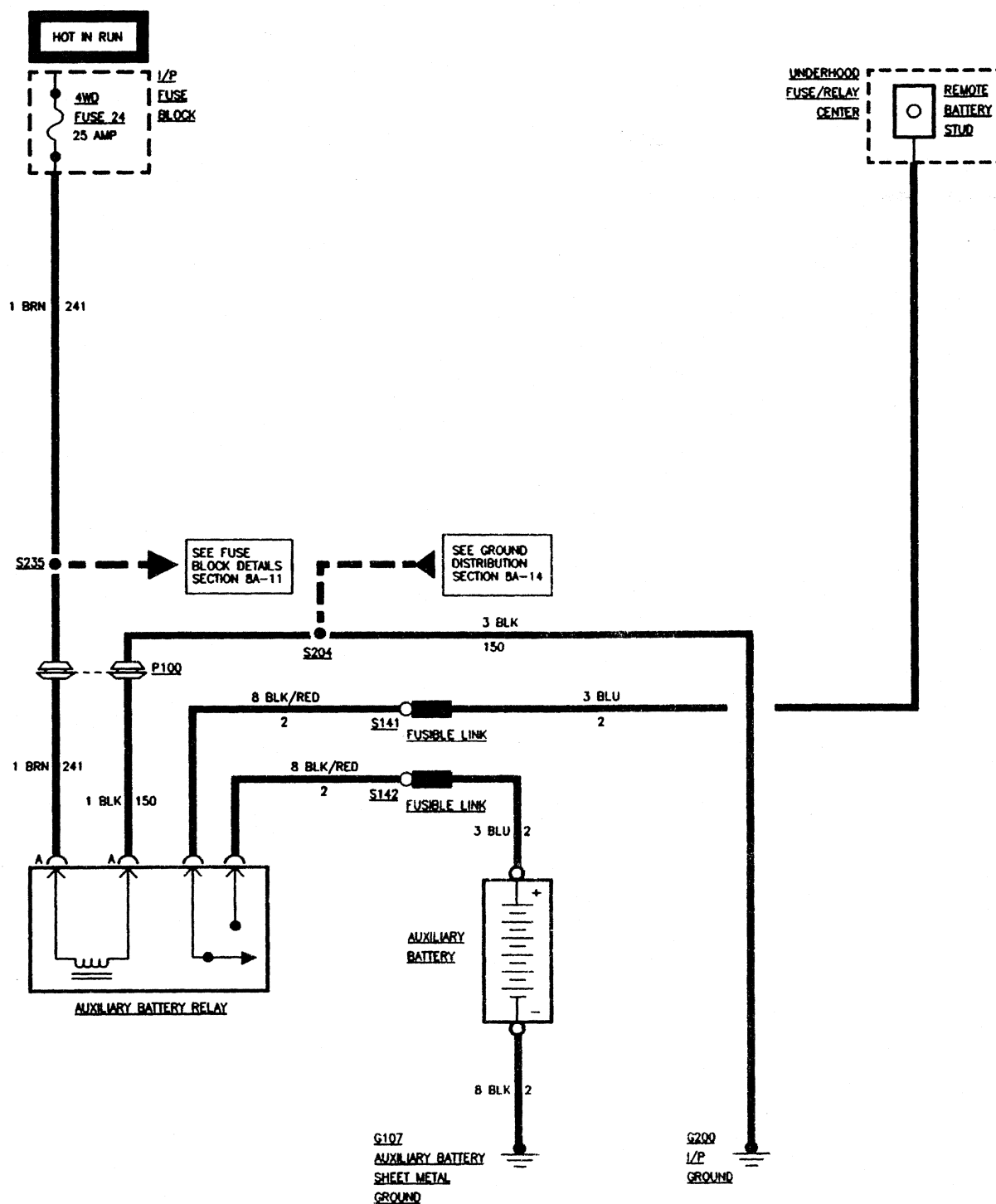
GROUND DISTRIBUTION

COMPONENT	LOCATION	201-PG	FIG.	CONN
Low Engine Coolant Level Indicator Module (Diesel).....	Under center of I/P	31	37	
Power Amplifier Relay	Under I/P, RH side of brake pedal bracket			
Transfer Case Shift Illumination Lamp	At transfer case selector lever	37	44	
Underhood Reel Lamp.....	RH front side of engine compartment			
Window Switch, LH Front.....	On LH trim panel	44.....	53	

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8A - 17 - 0 ELECTRICAL DIAGNOSIS

AUXILIARY BATTERY

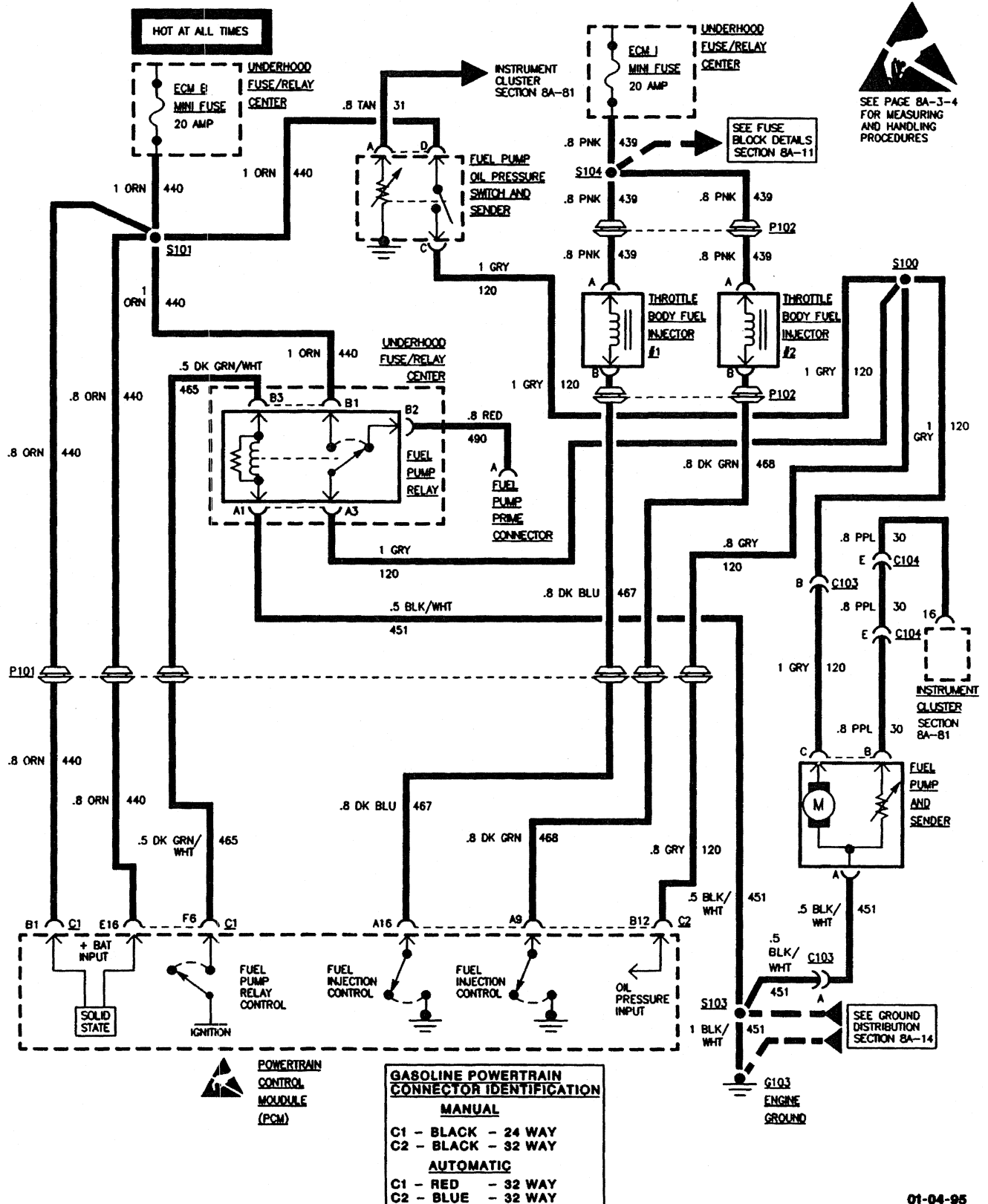


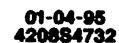
AUXILIARY BATTERY

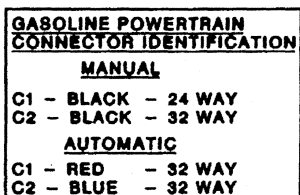
COMPONENT	LOCATION	201-PG	FIG.	CONN
Auxiliary Battery	LH front of engine compartment			
Auxiliary Battery Relay	LH rear of engine compartment, at fender, next to relay center	5		8
I/P Fuse Block	Lower LH side of I/P			
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5		8
GROUNDS:				
G107	On radiator support near LH headlamp			
G200	Behind LH side of I/P, below fuse block			
GROMMETS:				
P100	LH rear of engine compartment at bulkhead	7		10
SPLICES:				
S104 (VIN Z, H, K, N)	In generator breakout, approx. 16 cm from main engine harness			
S141	Auxiliary battery harness, 18 cm from underhood fuse/relay center			
S142	Auxiliary battery harness, 18 cm from underhood fuse/relay center			
S235	I/P harness, approx. 8 cm left of cruise control harness breakout			
S235 (Diesel)	Approx. 27 cm from I/P cluster connector			



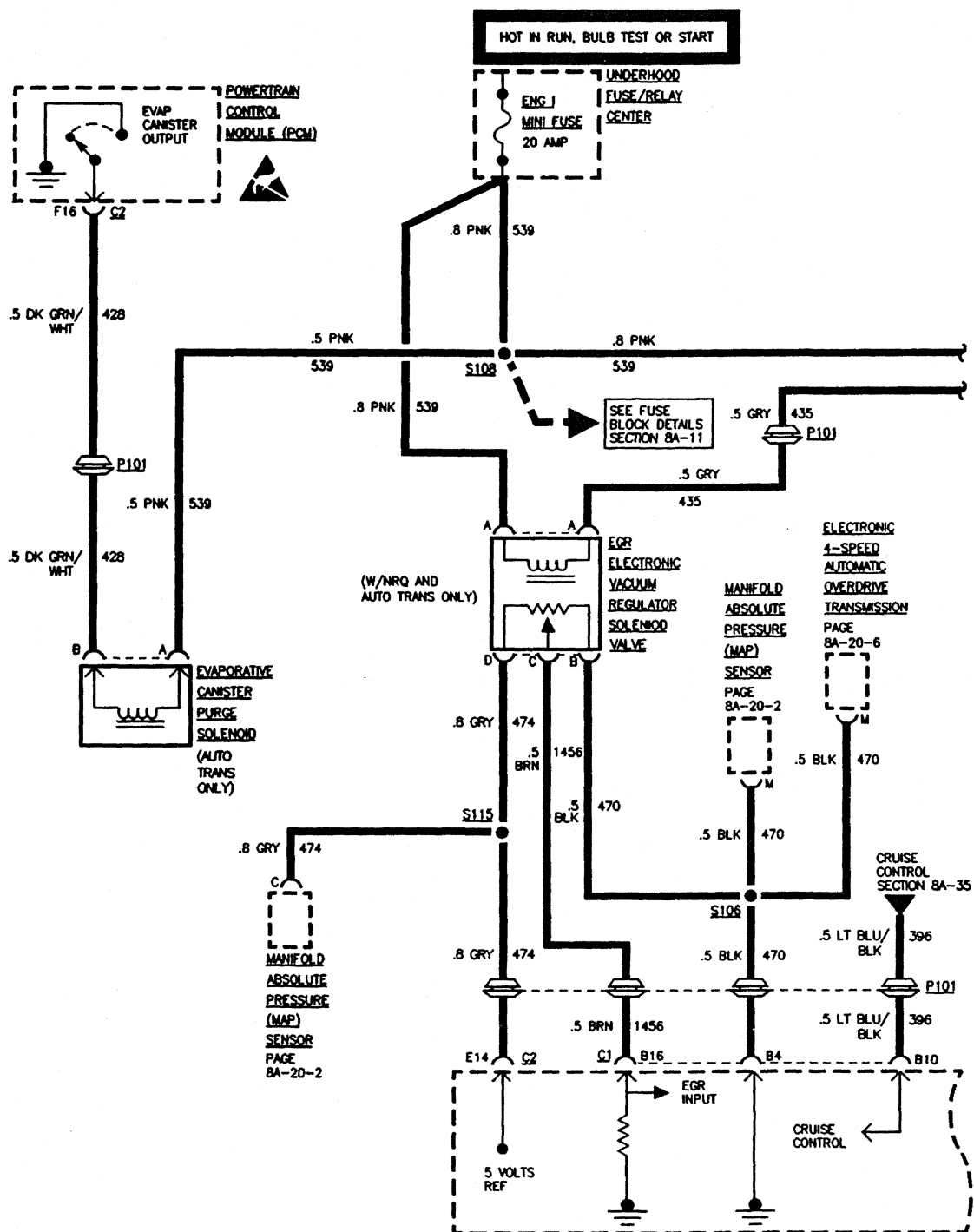
ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z MANUAL OR AUTOMATIC TRANSMISSION



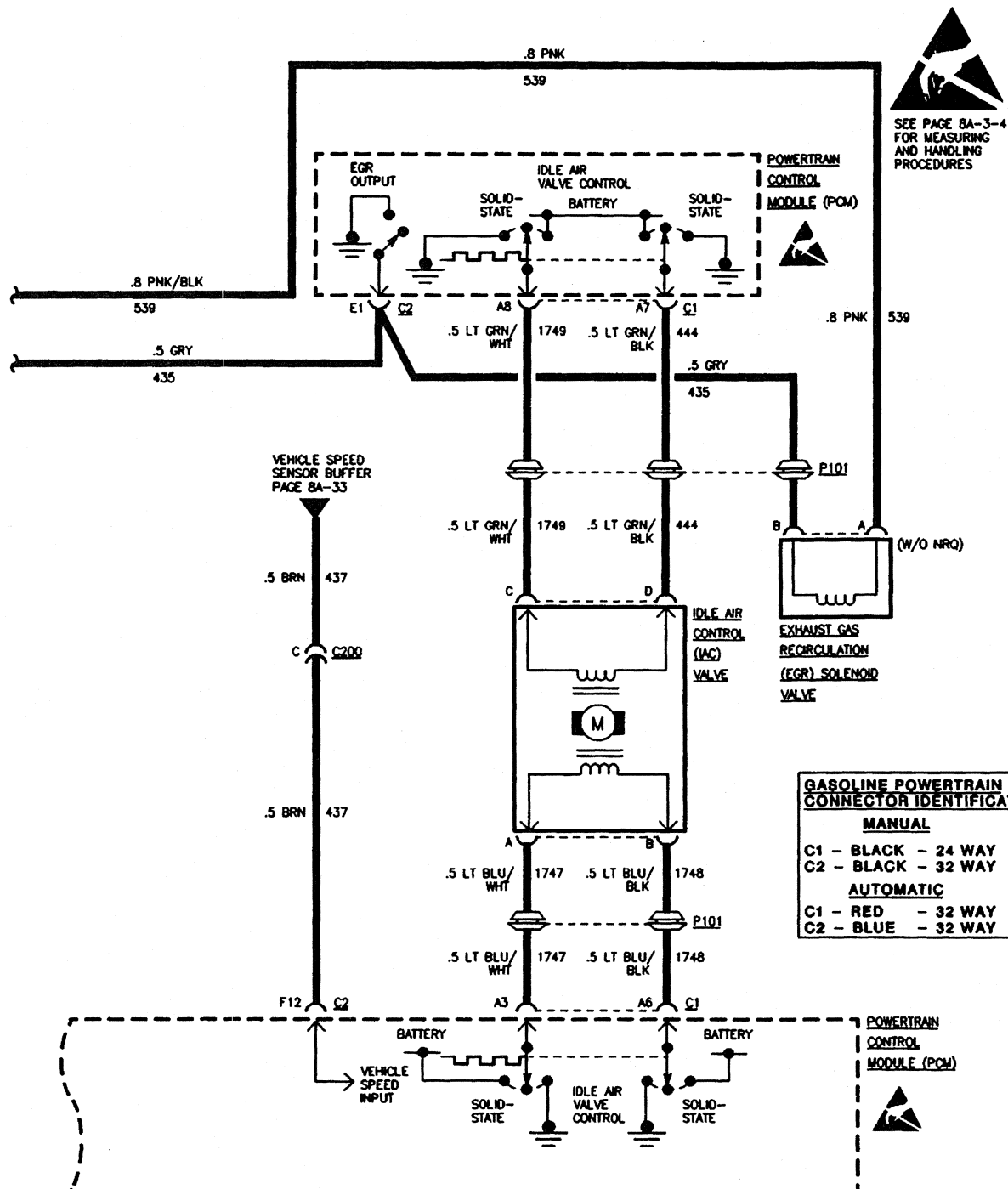




ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z
MANUAL OR AUTOMATIC TRANSMISSION

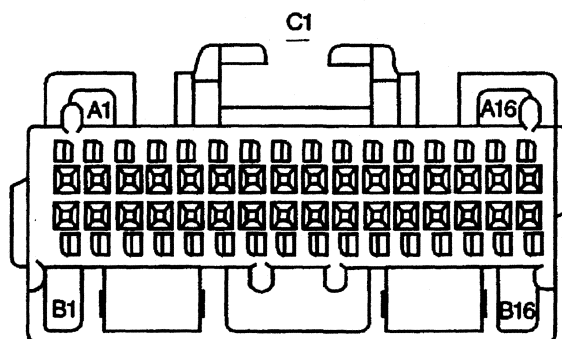


ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z MANUAL OR AUTOMATIC TRANSMISSION



8A - 20 - 8 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z



12110113
32 - WAY F MICRO - PACK 100 SERIES
DK RED

4408S2803

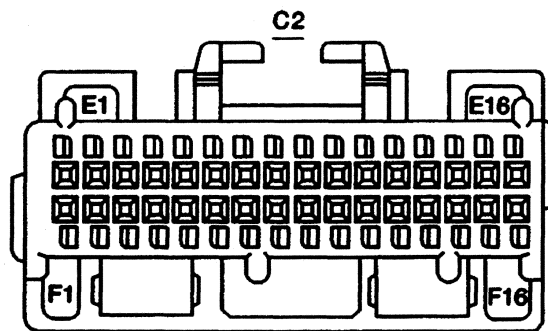
CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	BLK/WHT	.8	451	SYSTEM GROUND
A2	TAN/WHT	.8	551	SYSTEM GROUND
A3	LT BLU/WHT	.5	1747	STEPPER COIL A HIGH
A4	PPL/WHT	.8	430	DISTRIBUTOR REF HIGH
A5	RED/BLK	.8	453	DISTRIBUTOR REF LOW
A6	LT BLU/BLK	.5	1748	STEPPER COIL A LOW
A7	LT GRN/BLK	.5	444	STEPPER COIL B LOW
A8	LT GRN/WHT	.5	1749	STEPPER COIL B HIGH
A9	DK GRN	.8	468	LOW SIDE INJ B
A10	PPL	.8	412	LOW SIDE INJ B
A11				NOT USED
A12	TAN	.8	413	OXYGEN SENSOR LOW
A13				NOT USED
A14	WHT/BLK	.5	448	DLC
A15	DK BLU	.5	448	DLC
A15	DK BLU	.5	417	THROTTLE POSITION SENSOR
A16	DK BLU	.8	467	LOW SIDE INJ A
B1				NOT USED
B2	TAN/BLK	.8	424	IGNITION BY PASS
B3	BLK	.8	452	5V RETURN B
B4	BLK	.5	470	5V SYSTEM RETURN A

ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B5	YEL/BLK	.8	1227	PCM TO TRANS TEMP SENSOR
B6				NOT USED
B7	NOT USED			
B8	YEL	.8	410	ENGINE COOLANT TEMPERATURE SENSOR
B9	NOT USED			
B10	LT BLU/BLK	.5	396	CRUS IND REG CNTRLK GRD
B11				NOT USED
B12	GRY	.8	120	ELEC FUEL PUMP - INPUT
B13	LT GRN	.5	432	MANIFOLD ABSOLUTE PRESSURE SENSOR
B14				NOT USED
B15	DK BLU	.8	496	KNOCK SENSOR
B16	BRN	.5	1456	NOT USED

8A - 20 - 10 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z



12110115

32 - WAY F MICRO - PACK 100 SERIES
BLU

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
E1	GRY	.5	435	EGR ELECTRONICE VACUUM REGULATOR SOLENOID VALVE
E2	WHT	.8	687	TRANS SHIFT 2/3 SOL (AUTOMATIC TRANS)
E3	TAN/BLK	.5	456	NOT USED
E4	DK BLU	.8	1225	PCM TRANS RANGE MODE B
E5	RED	.8	1226	PCM TRANS RANGE MODE C
E6	BRN/WHT	.5	419	MALFUNCTION INDICATOR LAMP
E7				NOT USED
E8	YEL/BLK	.8	1223	PCM TRANS SHIFT SOL B
E9	LT GRN	.8	1222	PCM TRANS SHIFT SOL A
E10	TAN/BLK	.8	422	TORQUE CONVERTER CLUTCH
E11	BRN	.8	418	NOT USED
E12	DK GRN	.8	59	AIR CONDITIONING
E13	PPL	.5	420	BRAKE SW TO PCM
E14	GRY	.5	474	5V REF VOLTAGE
E15	PNK	.8	439	12V IGNITION FUSED
E16	ORN	.8	440	12 BATTERY FUSED
F1	PNK	.8	1224	PCM TRANS RANGE MODE A
F2				NOT USED
F3				NOT USED
F4				NOT USED
F5				NOT USED

ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
F6	DK GRN/WHT	.5	465	FUEL PUMP RELAY DRIVE
F7	LT BLU/WHT	.8	1229	PCM FORCE MTR LOW
F8	GRY/BLK	.5	1694	NOT USED
F9	TAN	.5	800	DLC SERIAL DATA
F10	RED/BLK	.8	1228	PCM TRANS FORCE MOTOR HIGH
F11	WHT	.8	423	IGNITION CONTROL
F12	BRN	.5	437	VEHICLE SPEED SENSOR BUFFER SIGNAL
F13	DK BLU	.5	1716	VEHICLE SPEED SENSOR BUFFER SIGNAL
F14	GRY	.8	416	5V SENSOR REF
F15	PNK	.8	439	NOT USED
F16	DK GRN/WHT	.5	428	NOT USED

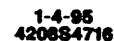
ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z

COMPONENT	LOCATION	201-PG	FIG.	CONN
Data Link Connector (DLC)	Under LH side of I/P	30	36	
Distributor Ignition Control (DIC) Module (VIN Z)	Center rear of engine	8	11	
Engine Coolant Temperature Sensor (VIN Z)	Top of engine, forward of throttle body	9	12	
Evaporative Canister Purge Solenoid	RH side of engine	9	12	
Exhaust Gas Recirculation (EGR) Electronic Vacuum Regulator Solenoid Valve	Top of engine, RH side			
Fuel Pump and Sender	In fuel tank			
Fuel Pump Oil Pressure Switch & Sensor (VIN Z)	Rear of engine, near distributor shaft	8	11	
Fuel Pump Oil Pressure Switch and Sender (VIN Z)	Rear top center of engine, behind distributor	11	14	
Fuse Block - I/P Harness	Lower LH side of I/P	26	31	
Heated Oxygen Sensor	At Y connection of exhaust pipe			
I/P Fuse Block	Lower LH side of I/P			
Idle Air Control (IAC) Valve (VIN Z)	Attached to RH rear of throttle body	9	12	
Ignition Coil (VIN Z)	Center rear of engine	8	11	
Ignition Switch	Under I/P, on steering column			
Instrument Cluster	LH upper end of I/P			
Knock Sensor (VIN Z)	RH cylinder head, near # 2 spark plug	8	11	
Manifold Absolute Pressure (MAP) Sensor (VIN Z)	Rear top center of engine	9	12	
Powertrain Control Module (PCM)	Under RH end of I/P, above blower motor	29	34	
TCC/Stoplamp Switch	Top of brake pedal	34	39	
Throttle Body Fuel Injectors (1 & 2)	Top of throttle body unit			
Throttle Position (TP) Sensor (VIN Z)	RH side of throttle body	9	12	
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C103	LH rear of engine compartment, under brake master cylinder			
C104	LH rear of engine compartment, under brake master cylinder			
C200	Behind RH portion of I/P, near heater motor, in foam wrap ..	28	33	

ENGINE CONTROLS - THROTTLE BODY INJECTION 4.3L VIN Z

COMPONENT	LOCATION	201-PG	FIG.	CONN
GROMMETS:				
P101	RH rear of engine compartment, at bulkhead			
P102	Engine compartment, on throttle body			
GROUND:				
G103 (VIN Z)	LH front of engine near thermostat housing.....	10.....	13	
G104 (VIN Z)	RH top of cylinder head, near center.....	16.....	19	
G105 (VIN Z, H, K)	RH front wheelhouse	1.....	4	
SPLICES:				
S100 (VIN Z, H, K, N)	Engine harness, approx. 11 cm from under hood lamp connector breakout			
S101 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from under hood lamp connector breakout			
S102 (VIN Z).....	In generator breakout, approx. 10 cm from engine harness			
S103 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator cable breakout			
S104 (VIN Z, H, K, N)	In generator breakout, approx. 16 cm from main engine harness			
S106 (VIN Z, auto)	Engine harness, approx. 25 cm from transmission breakout			
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout			
S108 (VIN F).....	Engine harness, 5 cm from generator breakout			
S108 (VIN Z).....	Engine harness, approx. 32 cm from windshield washer motor breakout			
S115 (VIN Z, auto).....	Engine harness, approx. 7 cm from underhood lamp connector breakout			
S116 (VIN Z).....	Engine harness, approx. 7 cm from knock sensor breakout			
S207	I/P harness, approx. 8 cm right of steering column connector breakout			
S213	I/P harness, approx. 16 cm right of fuse block breakout			
S215	I/P harness, approx. 8 cm right of I/P cluster breakout			
S229 (VIN Z).....	Engine harness, under RH side of I/P 18 cm from P101			
S230 (VIN Z, H, K manual)....	Engine harness, approx. 21 cm from P101			
S231 (VIN Z, H, K, N)	Engine harness, approx. 4 cm from C200 breakout			



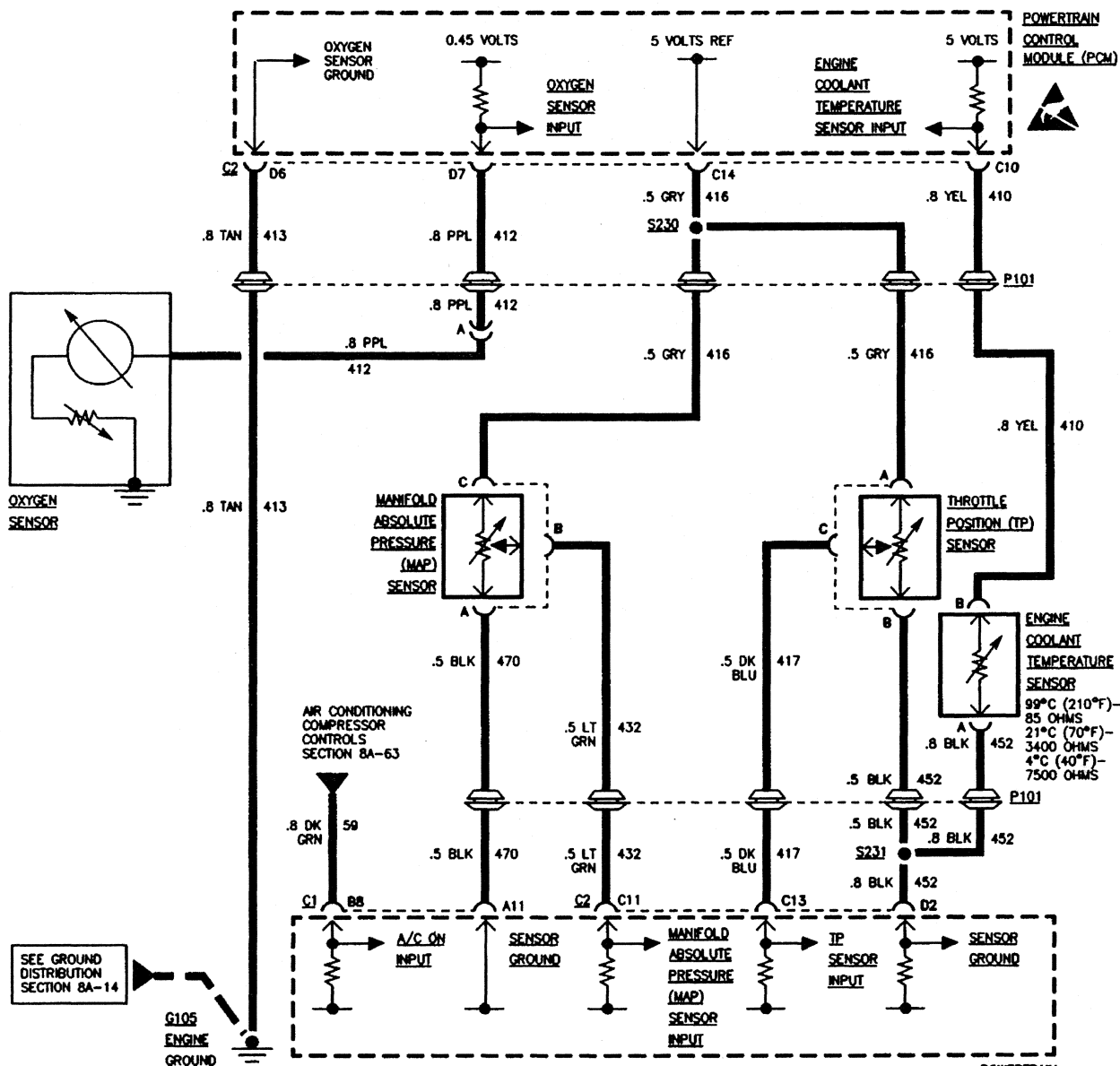


8A - 21 - 2 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K MANUAL TRANSMISSION



SEE PAGE 8A-3-4
FOR MEASURING
AND HANDLING
PROCEDURES

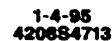
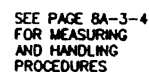


SEE GROUND
DISTRIBUTION
SECTION 8A-14

GASOLINE POWERTRAIN CONNECTOR IDENTIFICATION	
MANUAL	
C1 - BLACK	- 24 WAY
C2 - BLACK	- 32 WAY
AUTOMATIC	
C1 - RED	- 32 WAY
C2 - BLUE	- 32 WAY

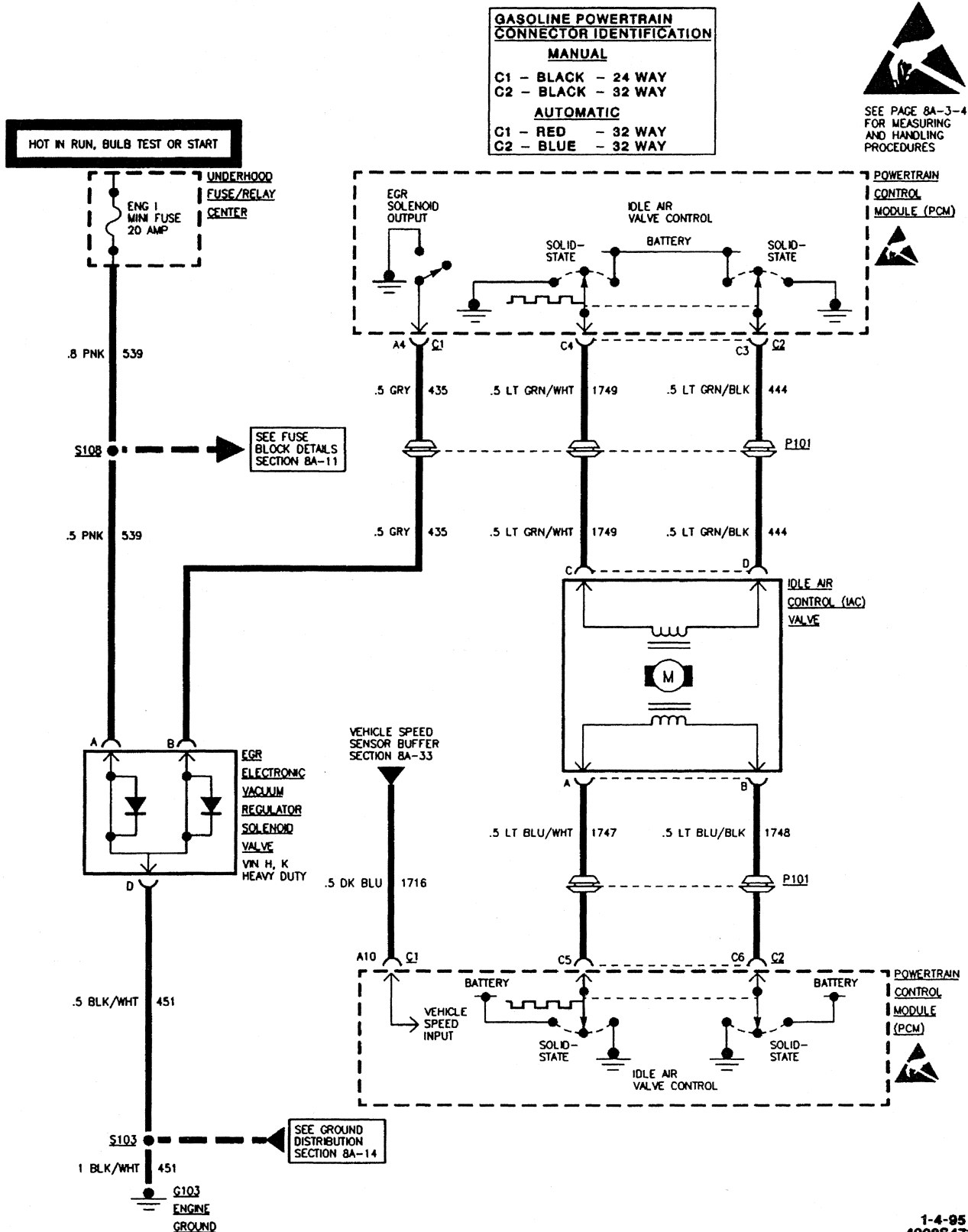


**POWERTRAIN
CONTROL
MODULE (PCM)**

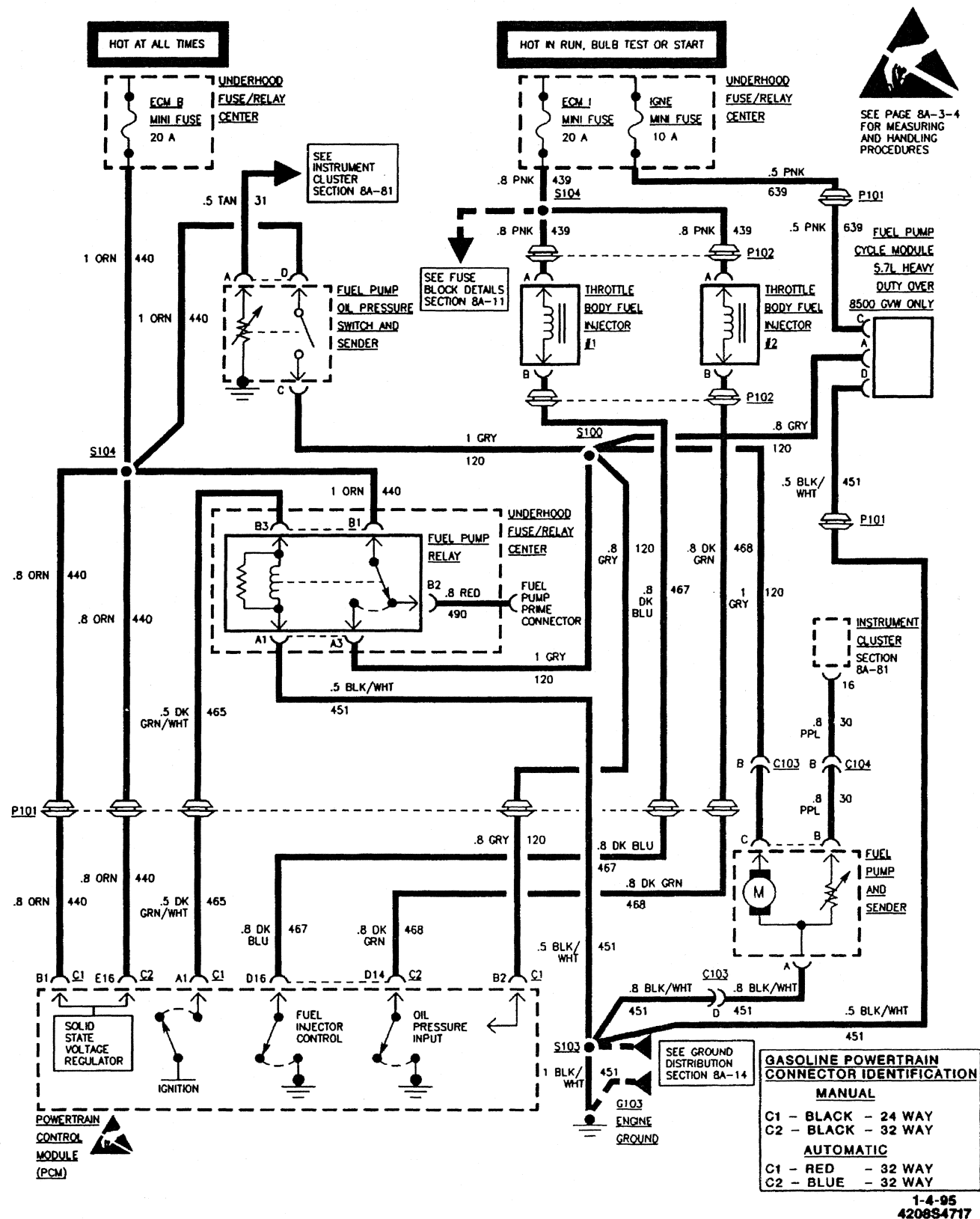


8A - 21 - 4 ELECTRICAL DIAGNOSIS

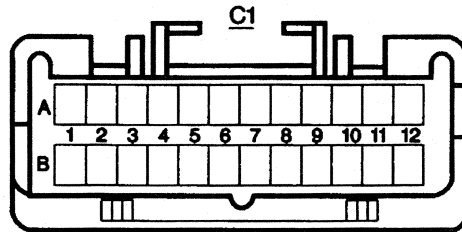
ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K MANUAL TRANSMISSION - HEAVY DUTY (OVER 8500 GVW ONLY)



ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K MANUAL TRANSMISSION - HEAVY DUTY (OVER 8500 GVW ONLY)



ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K



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24 - WAY F MICRO - PACK 100 SERIES
BLK

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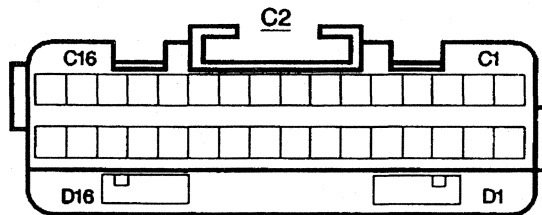
CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	DK GRN/WHT	.8	465	FUEL PUMP RELAY DRIVE
A2				NOT USED
A3				NOT USED
A4	GRY	.5	435	EGR SOLENOID
A5	BRN/WHT	.5	419	MALFUNCTION INDICATOR LAMP CONTROL
A6	PINK	.8	439	12V IGNITION (FUSED)
A7	TAN/BLK	.5	456	UPSHIFT LAMP CONTROL
A8	ORN	.5	461	DLC SERIAL DATA
A9	WHT/BLK	.5	448	DLC DIAGNOSTIC TEST
A10	DK BLU	.5	1716	VEHICLE SPEED SENSOR BUFFER SIGNAL
A11	BLK	.5	470	MAP SENSOR 5V RETURN GROUND
A12	BLK/WHT	.8	451	SYSTEM GROUND
B1	ORN	.8	440	12V BATTERY (FUSED)
B2	GRY	.8	120	FUEL PUMP SIGNAL (INPUT)
B3	RED/BLK	.8	453	DISTRIBUTOR REFLOW
B4				NOT USED
B5	PPL/WHT	.8	430	DISTRIBUTOR REF HIGH
B6				NOT USED
B7	YEL/BLK	.8	457	SPARK RETARD SIGNAL
B8	DK GRN	.8	59	A/C REQUEST SIGNAL
B9				NOT USED

8A - 21 - 8 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B10				NOT USED
B11				NOT USED
B12				NOT USED

ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K



12045575
32 - WAY F MICRO - PACK 100 SERIES
BLK

4208S5283

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1				NOT USED
C2				NOT USED
C3	LT GRN/BLK	.5	444	IAC COIL B LOW
C4	LT GRN/WHT	.5	1749	IAC COIL B HIGH
C5	LT BLU/WHT	.5	1747	IAC COIL A HIGH
C6	LT BLU/BLK	.5	1748	IAC COIL A LOW
C7				NOT USED
C8				NOT USED
C9	PPL	.5	806	CRANK SIGNAL
C10	YEL	.8	410	ENGINE COOLANT TEMPERATURE SENSOR SIGNAL
C11	LT GRN	.5	432	MAP SENSOR SIGNAL
C12				NOT USED
C13	DK BLU	.5	417	TP SENSOR SIGNAL
C14	GRY	.5	416	5V SENSOR REFERENCE
C15				NOT USED
C16	ORN	.8	440	12V BATTERY (FUSED)

8A - 21 - 10 ELECTRICAL DIAGNOSIS**ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K**

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
D1	BLK/WHT	.8	451	SYSTEM GROUND
D2	BLK	.8	452	TP SENSOR AND ENGINE COOLANT SENSOR 5V RETURN GROUND
D3				NOT USED
D4	WHT	.8	423	IGNITION CONTROL (IC)
D5	TAN/BLK	.8	424	IC BYPASS
D6	TAN	.5	413	OXYGEN SENSOR GROUND
D7	PPL	.8	412	OXYGEN SENSOR SIGNAL
D8				NOT USED
D9				NOT USED
D10				NOT USED
D11				NOT USED
D12				NOT USED
D13				NOT USED
D14	DK GRN	.8	468	INJECTOR 2 DRIVER
D15				NOT USED
D16				NOT USED

ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K

COMPONENT	LOCATION	201-PG	FIG.	CONN
Data Link Connector (DLC)	Under LH side of I/P.....	30	36	
Distributor Ignition Control (DIC) Module (VIN Z).....	Center rear of engine	8	11	
Electronic Vacuum Regulator Solenoid Valve, 5.7L w/MT1	Top RH side of engine, above valve cover			
Engine Coolant Temperature Sender	LH cylinder head, near # 1 spark plug			
Exhaust Gas Recirculation (EGR)Electronic Vacuum Regulator Solenoid Valve.....	Top of engine, RH side			
Fuel Pump and Sender	In fuel tank			
Fuse Block - I/P Harness	Lower LH side of I/P	26	31	
Idle Air Control (IAC) Valve (VIN H, K)	Attached to RH rear of throttle body	10	13	
Ignition Coil (VIN H, K).....	Center rear of engine	11	14	
Instrument Cluster	LH upper end of I/P			
Knock Sensor (VIN H, K).....	RH side of engine block, below exhaust manifold, forward of starter	10	13	
Knock Sensor Module	Above RH rocker cover			
Manifold Absolute Pressure (MAP) Sensor (VIN H & K)	Top RH rear of engine, mounted on valve cover	10	13	
Oxygen Sensor (manifold, VIN H & K).....	In RH exhaust manifold, near flange			
Powertrain Control Module (PCM)	Under RH end of I/P, above blower motor	29	34	
Throttle Body Fuel Injectors (1 & 2)	Top of throttle body unit			
Throttle Position (TP) Sensor (VIN H, K)	RH side of throttle body	10	13	
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C103	LH rear of engine compartment, under brake master cylinder			
C104	LH rear of engine compartment, under brake master cylinder			
C200	Behind RH portion of I/P, near heater motor, in foam wrap..	28	33	
GROMMETS:				
P101	RH rear of engine compartment, at bulkhead			
P102	Engine compartment, on throttle body			

8A - 21 - 12 ELECTRICAL DIAGNOSIS

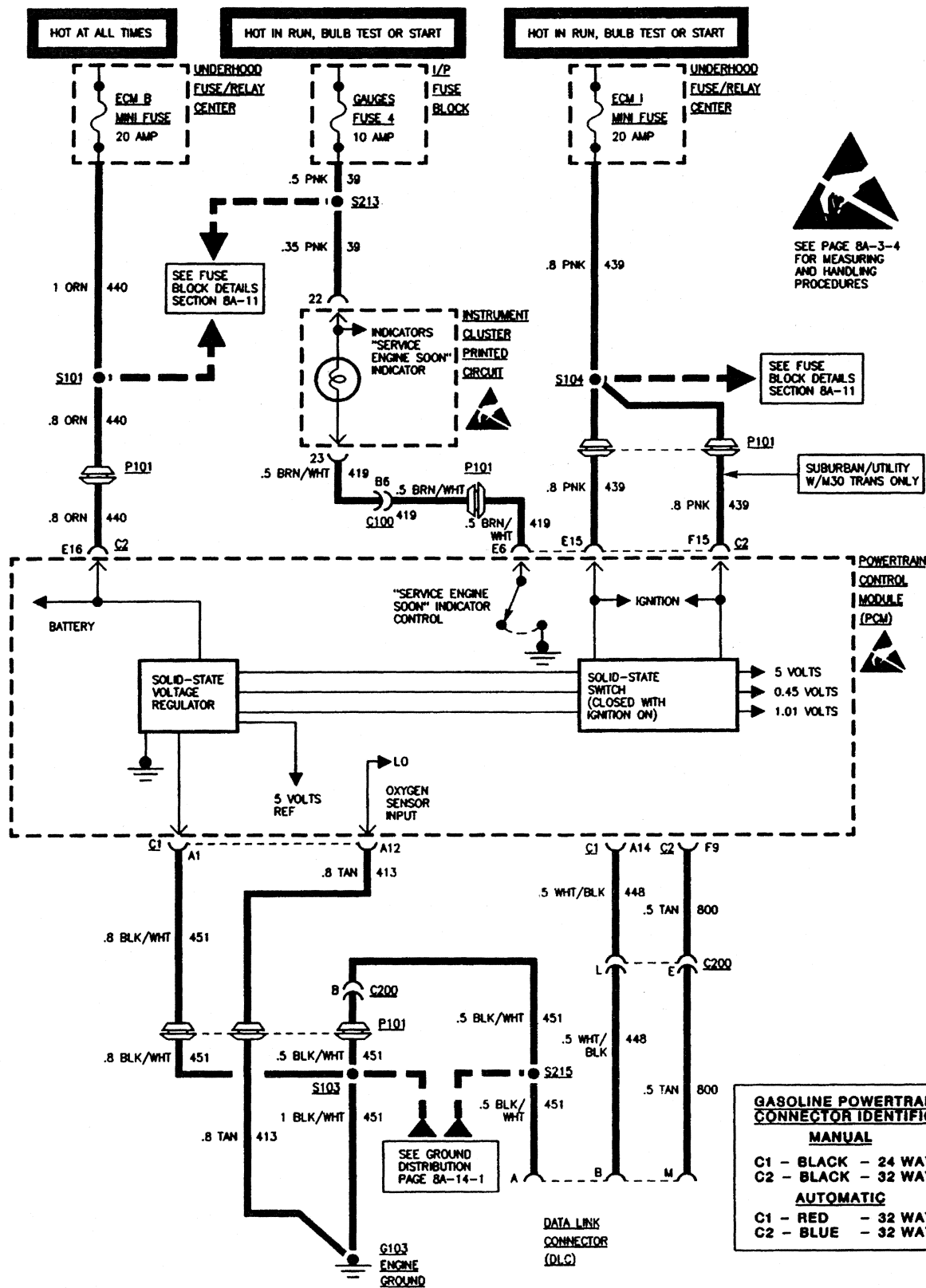
ENGINE CONTROLS - TBI, 5.0L VIN H, 5.7L VIN K

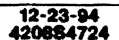
COMPONENT	LOCATION	201-PG	FIG.	CONN
GROUNDS:				
G103 (VIN H, K)	LH front of engine near thermostat housing	10	.....	13
G106	On intake manifold			
SPLICES:				
S100 (VIN Z, H, K, N)	Engine harness, approx. 11 cm from under hood lamp connector breakout			
S101 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from under hood lamp connector breakout			
S102 (VIN H, K)	In tachometer breakout, 10 cm from engine harness			
S103 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator cable breakout			
S104 (VIN Z, H, K, N)	In generator breakout, approx. 16 cm from main engine harness			
S108 (VIN H, K)	Engine harness, approx. 7 cm from windshield wiper motor breakout			
S109 (VIN H, K)	Engine harness, approx. 28 cm from C100			
S109 (VIN K)	Engine harness, approx. 28 cm from C100			
S207	I/P harness, approx. 8 cm right of steering column connector breakout			
S213	I/P harness, approx. 16 cm right of fuse block breakout			

BLANK

8A - 23 - 0 ELECTRICAL DIAGNOSIS

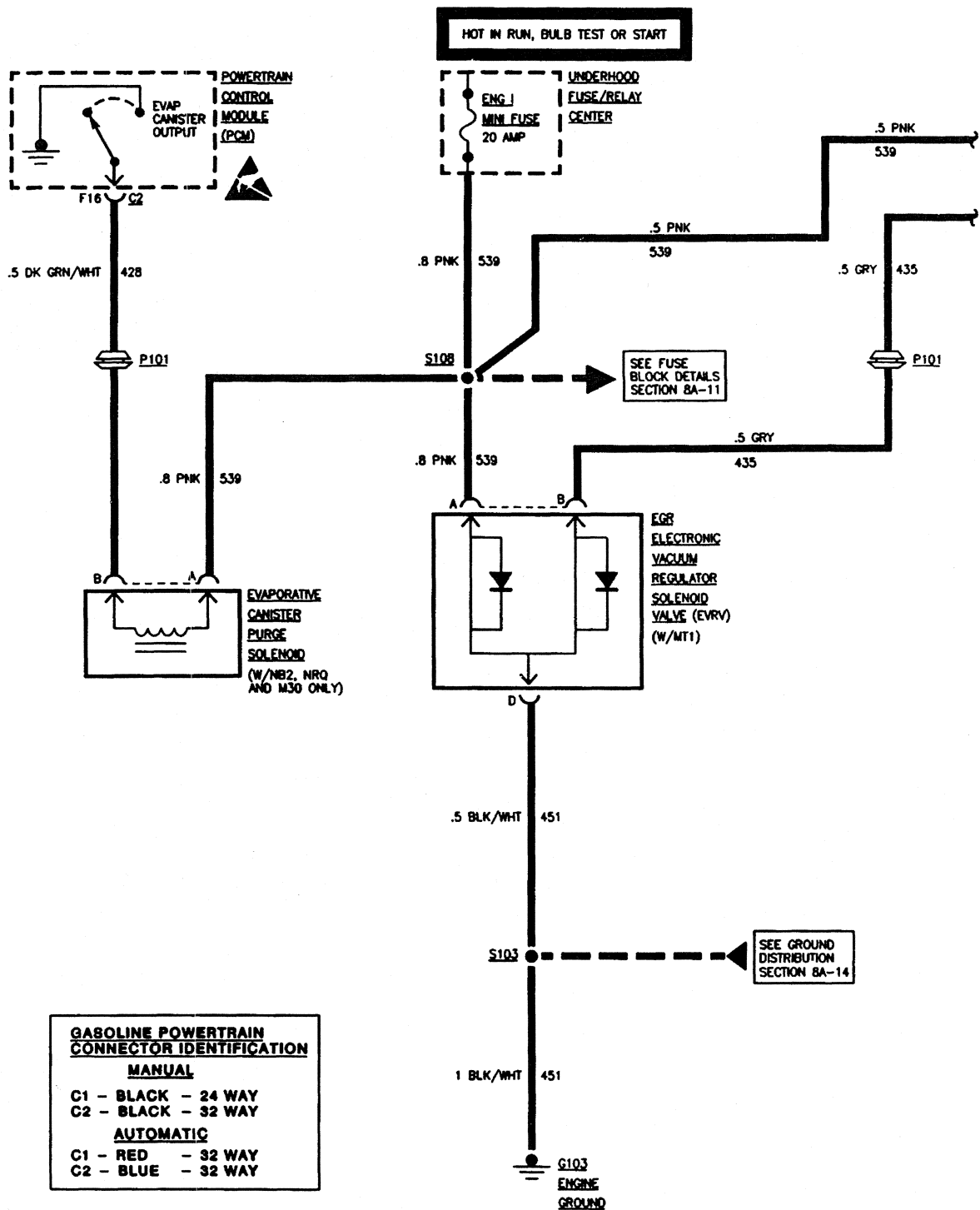
ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION







ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION

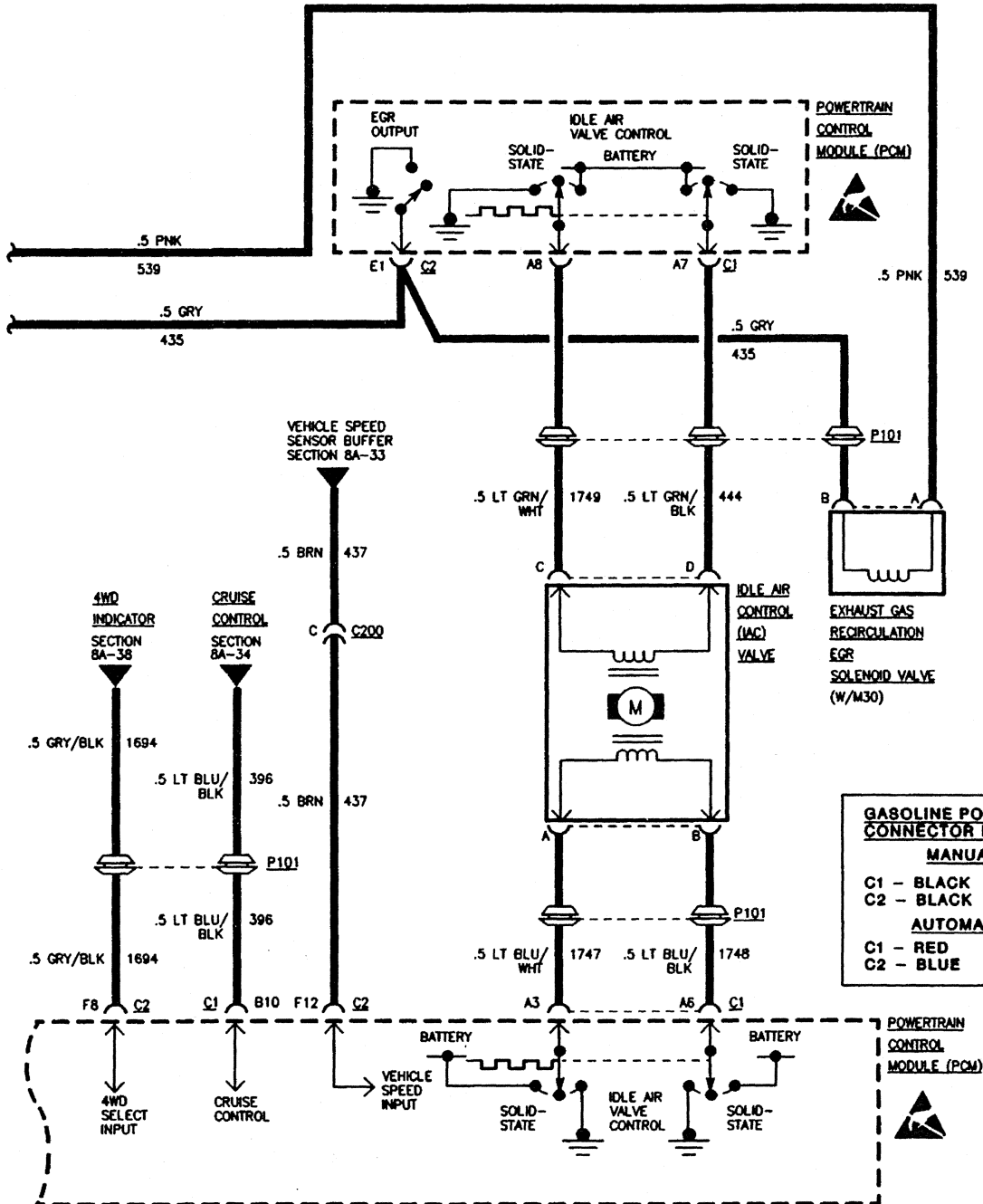


8A - 23 - 4 ELECTRICAL DIAGNOSIS

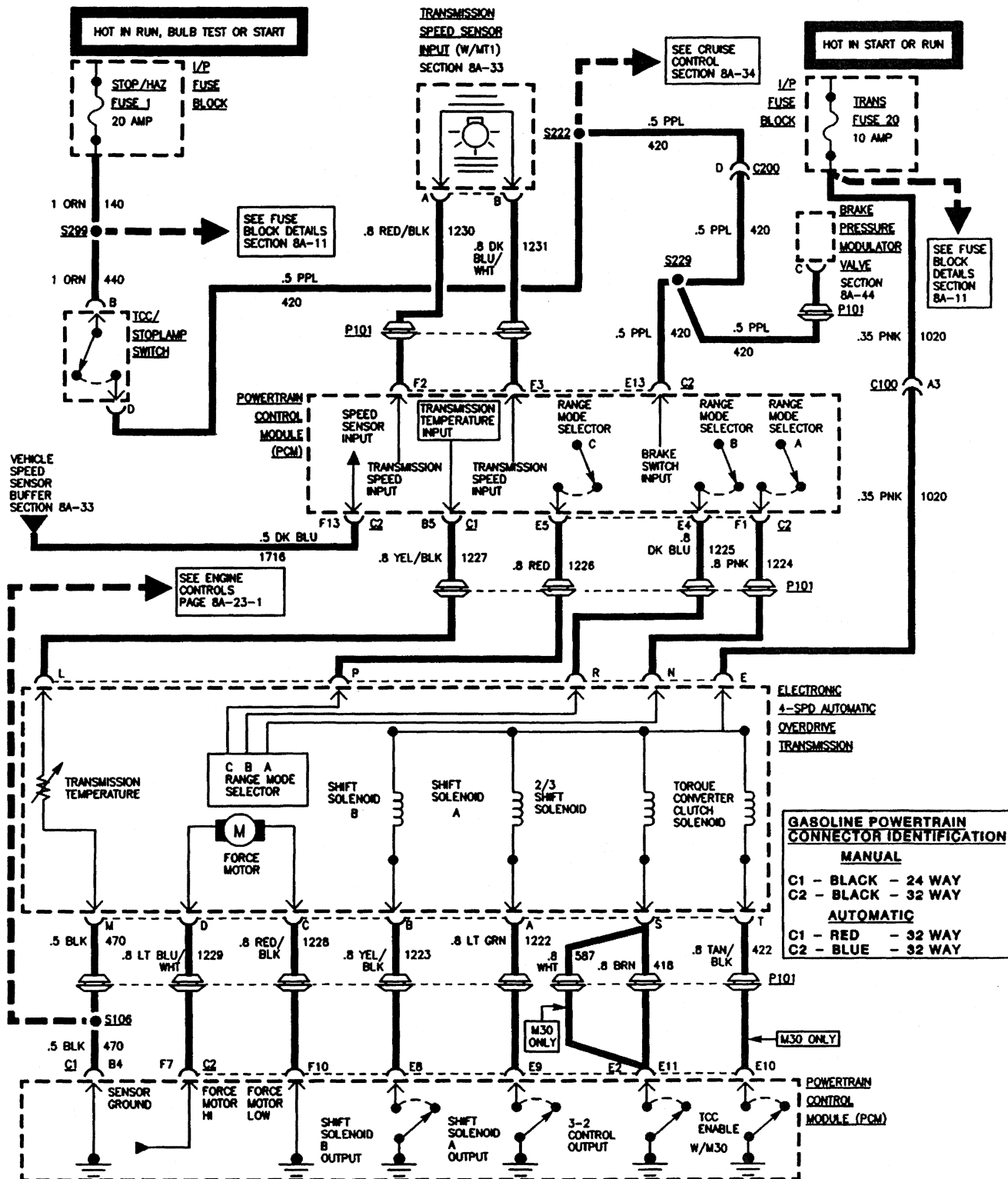
ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION



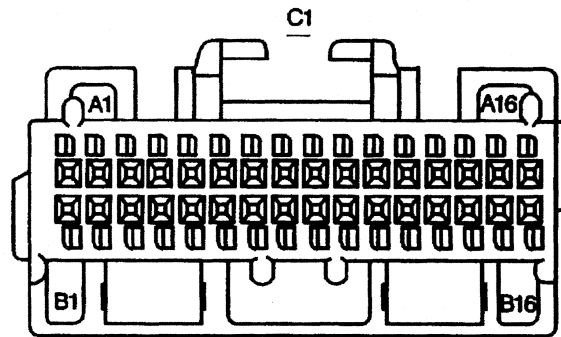
SEE PAGE 8A-3-4
FOR MEASURING
AND HANDLING
PROCEDURES



ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION



ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION



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32 - WAY F MICRO - PACK 100 SERIES
DK RED

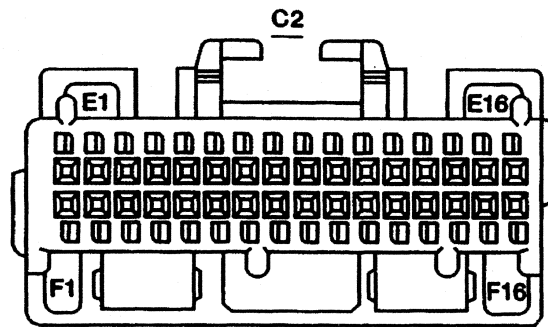
4408S2803

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	BLK/WHT	.8	451	SYSTEM GROUND
A2	TAN/WHT	.8	551	SYSTEM GROUND
A3	LT BLU/WHT	.5	1747	STEPPER COIL
A4	PPL/WHT	.8	430	DISTRIBUTOR REF HIGH
A4	PPL/WHT	.8	430	DISTRIBUTOR REF HIGH
A5	RED/BLK	.8	453	DISTRIBUTOR REF LOW
A6	LT BLU/BLK	.5	1748	STEPPER COIL A LOW
A7	LT GRN/BLK	.5	444	STEPPER COIL B LOW
A8	LT GRN/WHT	.5	1749	STEPPER COIL B HIGH
A9	DK GRN	.8	468	LOW SIDE INJ B
A10	PPL	.8	412	OXYGEN SENSOR HIGH
A11				NOT USED
A12	TAN	.8	413	OXYGEN SENSOR LOW
A13				NOT USED
A14	WHT/BLK	.5	448	DLC
A15	DK BLU	.5	417	THROTTLE POSITION SENSOR
A16	DK BLU	.8	467	LOW SIDE INJ A
B1	TAN/BLK	.8	424	IGNITION BYPASS
B3	BLK	.8	452	5V RETURN B
B4	BLK	.5	470	5V SYSTEM RETURN A
B5	YEL/BLK	.8	1227	PCM TO TRANS TEMP SENSOR

8A - 23 - 8 ELECTRICAL DIAGNOSIS**ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K
AUTOMATIC TRANSMISSION**

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B6				NOT USED
B7				NOT USED
B8	YEL	.8	410	ENGINE COOLANT TEMPERATURE SENSOR
B9				NOT USED
B10	LT BLU/BLK	.5	396	CRUS IND REG CNTRLD GRD
B11				NOT USED
B12	GRA	.8	120	ELEC FUEL PUMP-INPUT
B13	LT GRN	.5	432	MANIFOLD ABSOLUTE PRESSURE SENSOR
B14				NOT USED
B15	DK BLU	.8	496	KNOCK SENSOR
B16				NOT USED

ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION



12110115

32 - WAY F MICRO - PACK 100 SERIES
BLU

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
E1	GRA	.5	435	EGR ELECTRONIC VACUUM REGULATOR SOLENOID VALVE
E1	GRA	.5	435	EXHAUST GAS RECIRCULATION (EGR) VALVE SOLENOID
E2	WHT	.8	687	TRANS SHIFT 2/3 SOL
E3				NOT USED
E4	DK BLU	.8	1225	PCM TRANS RANGE MODE B
E5	RED	.8	1226	PCM TRANS RANGE MODE C
E6	BRN/WHT	.5	419	MALFUNCTION INDICATOR LAMP
E7				NOT USED
E8	YEL/BLK	.8	1223	PCM TRANS SHIFT SOL B
E9	LT GRN	.8	1222	PCM TRANS SHIFT SOL A
E10	TAN/BLK	.8	422	TORQUE CONVERTER CLUTCH
E11	DK BRN	.8	418	2/3 SHIFT SOLENOID
E12	DK/GRN	.8	59	AIR CONDITIONING
E13	PPL	.5	420	BRAKE SW TO PCM
E14	GRA	.5	474	5V REF VOLTAGE.
E15	PNK	.8	439	12V IGNITION FUSED
E16	ORN	.8	4440	12 BATTERY FUSED
F1	PNK	.8	1224	PCM TRANS RANGE MODE A
F2	RED/BLK	.8	1230	INPUT SPEED SENSOR HIGH
F3	DK BLU/WHT	.8	1231	INPUT SPEED SENSOR LOW
F4				NOT USED

8A - 23 - 10 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
F5				NOT USED
F6	DK GRN/WHT	.5	465	FUEL PUMP RELAY DRIVE
F7	LT BLU/WHT	.8	1229	PCM TRANS FORCE MTR LOW
F8	GRA/BLK	.5	1694	SHIFT PERFORMANCE SELECT SWITCH INPUT
F9	TAN	.5	800	DLC SERIAL DATA
F10	RED/BLK	.8	1228	PCM TRANS FORCE MOTOR HIGH
F11	WHT	.8	423	IGNITION CONTROL (IC)
F12	BRN	.5	437	VEHICLE SPEED SENSOR BUFFER SIGNAL
F13	DK BLU	.5	1716	VEHICLE SPEED SENSOR BUFFER SIGNAL
F14	GRA	.5	416	5V SENSOR REF
F15	PNK	.8	439	12V IGNITION FUSED
F16	DK GRN/WHT	.5	428	EVAPORATIVE CANISTER PURGE CONTROL

COMPONENT	LOCATION	201-PG	FIG.	CONN
Data Link Connector (DLC)	Under LH side of I/P	30	.....	36
Distributor Ignition Control (DIC) Module (VIN H, K)....	Rear LH lower portion of distributor module	11	.....	14
Electronic 4-speed Automatic Overdrive Transmission.....	Attached to rear of engine			
Engine Coolant Temperature Sensor	LH cylinder head, near # 1 spark plug			
Evaporative Canister Purge Solenoid.....	RH side of engine.....	9	.....	12
Exhaust Gas Recirculation (EGR) Solenoid Valve (W/M30).....	LH rear top of engine			
Fuel Pump and Sender	In fuel tank			
Fuel Pump Oil Pressure Switch and Sender VIN H, K)	Rear top center of engine, behind distributor	11	.....	14
Heated Oxygen Sensor	At Y connection of exhaust pipe			
I/P Fuse Block	Lower LH side of I/P			
Idle Air Control (IAC) Valve (VIN H, K)	Attached to RH rear of throttle body	10	.....	13
Ignition Coil (VIN H, K).....	Center rear of engine	11	.....	14
Ignition Switch.....	Under I/P, on steering column			
Instrument Cluster.....	LH upper end of I/P			

ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K AUTOMATIC TRANSMISSION

COMPONENT	LOCATION	201-PG	FIG.	CONN
Knock Sensor (VIN H, K)	RH side of engine block, below exhaust manifold, forward of starter	10	13	
Manifold Absolute Pressure (MAP) Sensor (VIN H & K)	Top RH rear of engine, mounted on valve cover	10	13	
Oxygen Sensor. (exhaust pipe, VIN H, K & Z)	In exhaust pipe, near crossover	20	23	
Oxygen Sensor (manifold, VIN H & K)	In RH exhaust manifold, near flange			
Powertrain Control Module (PCM) (C1, C2)	Under RH end of I/P, above blower motor	29	34	
TCC/Stoplamp Switch	Top of brake pedal	34	39	
Throttle Body Injectors (1 & 2)	Top of throttle body unit			
Throttle Position (TP) Sensor (VIN H, K)	RH side of throttle body	10	13	
Transmission Input Speed Sensor	LH side of transmission			
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C103	LH rear of engine compartment, under brake master cylinder			
C104	LH rear of engine compartment, under brake master cylinder			
C200	Behind RH portion of I/P, near heater motor, in foam wrap..	28	33	
GROUND:				
G103 (VIN H, K)	LH front of engine near thermostat housing	10	13	
G105 (VIN Z, H, K)	RH front wheelhouse	1	4	
GROMMETS:				
P101	RH rear of engine compartment, at bulkhead			
P102	Engine compartment, on throttle body			
SPLICES:				
S100 (VIN Z, H, K, N)	Engine harness, approx. 11 cm from under hood lamp connector breakout			
S101 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from under hood lamp connector breakout			
S102 (VIN H, K)	In tachometer breakout, 10 cm from engine harness			
S103 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator cable breakout			
S104 (VIN Z, H, K, N)	In generator breakout, approx. 16 cm from main engine harness			
S105 (VIN Z, H, K, N)	In generator breakout, approx. 28 cm from main engine harness			
S106 (VIN H, K auto)	Engine harness, approx. 10 cm into generator breakout			

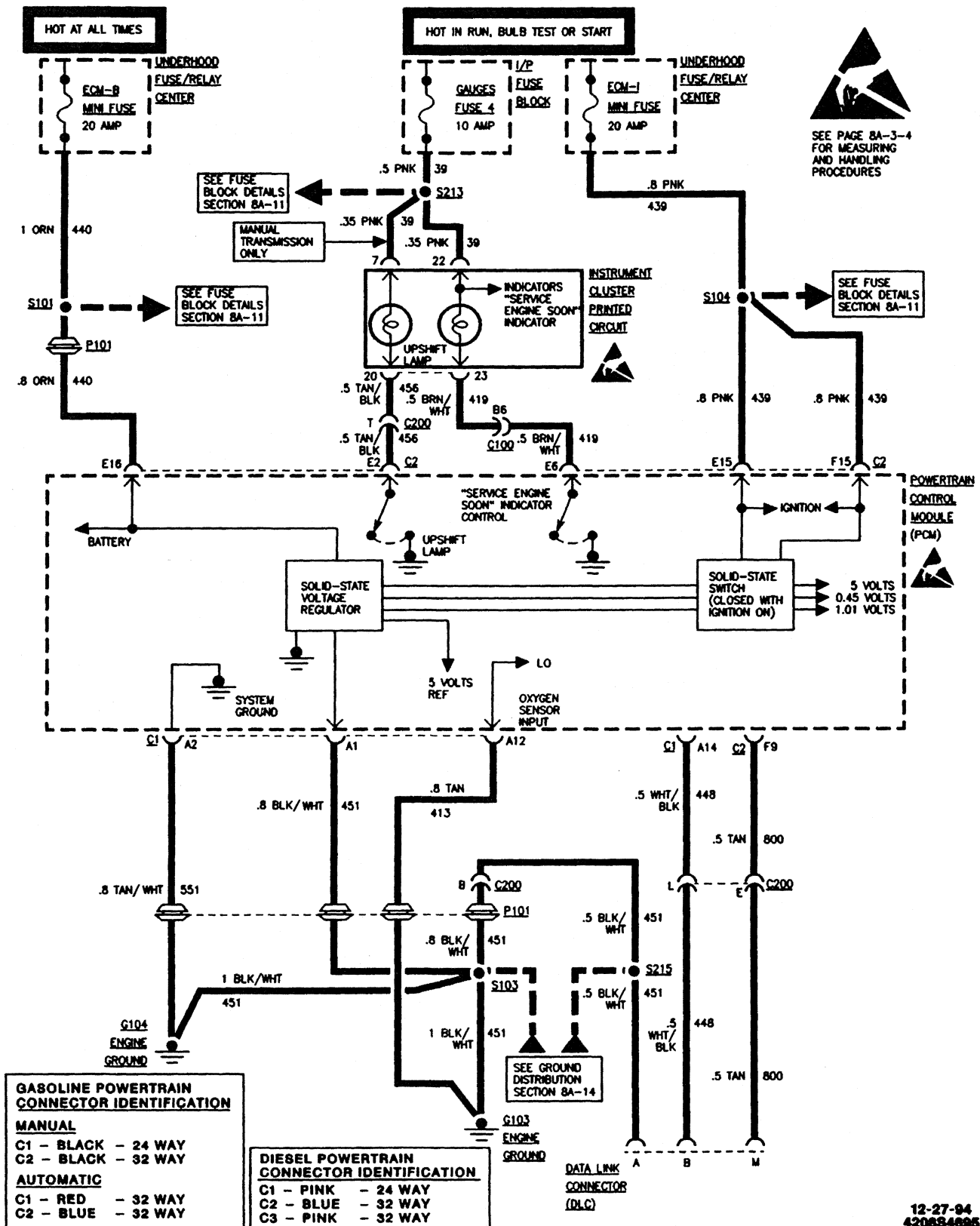
**ENGINE CONTROLS - TBI 5.0L VIN H, 5.7L VIN K
AUTOMATIC TRANSMISSION**

COMPONENT	LOCATION	201-PG FIG. CONN
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout	
S108 (VIN H, K)	Engine harness, approx. 7 cm from windshield wiper motor breakout	
S201	I/P harness, approx. 23 cm from TCC stop lamp switch connector	
S206	I/P harness, approx. 6 cm right of steering column connector breakout	
S213	I/P harness, approx. 16 cm right of fuse block breakout	
S215	I/P harness, approx. 8 cm right of I/P cluster breakout	
S222	I/P harness, approx. 20 cm right of turn signal flasher breakout	
S229 (VIN Z, H, K auto)	Engine harness, approx. 30 cm from P101	
S251 (Suburban) (base only)	Crossbody harness, 8 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 6 cm left of LH seat breakout	

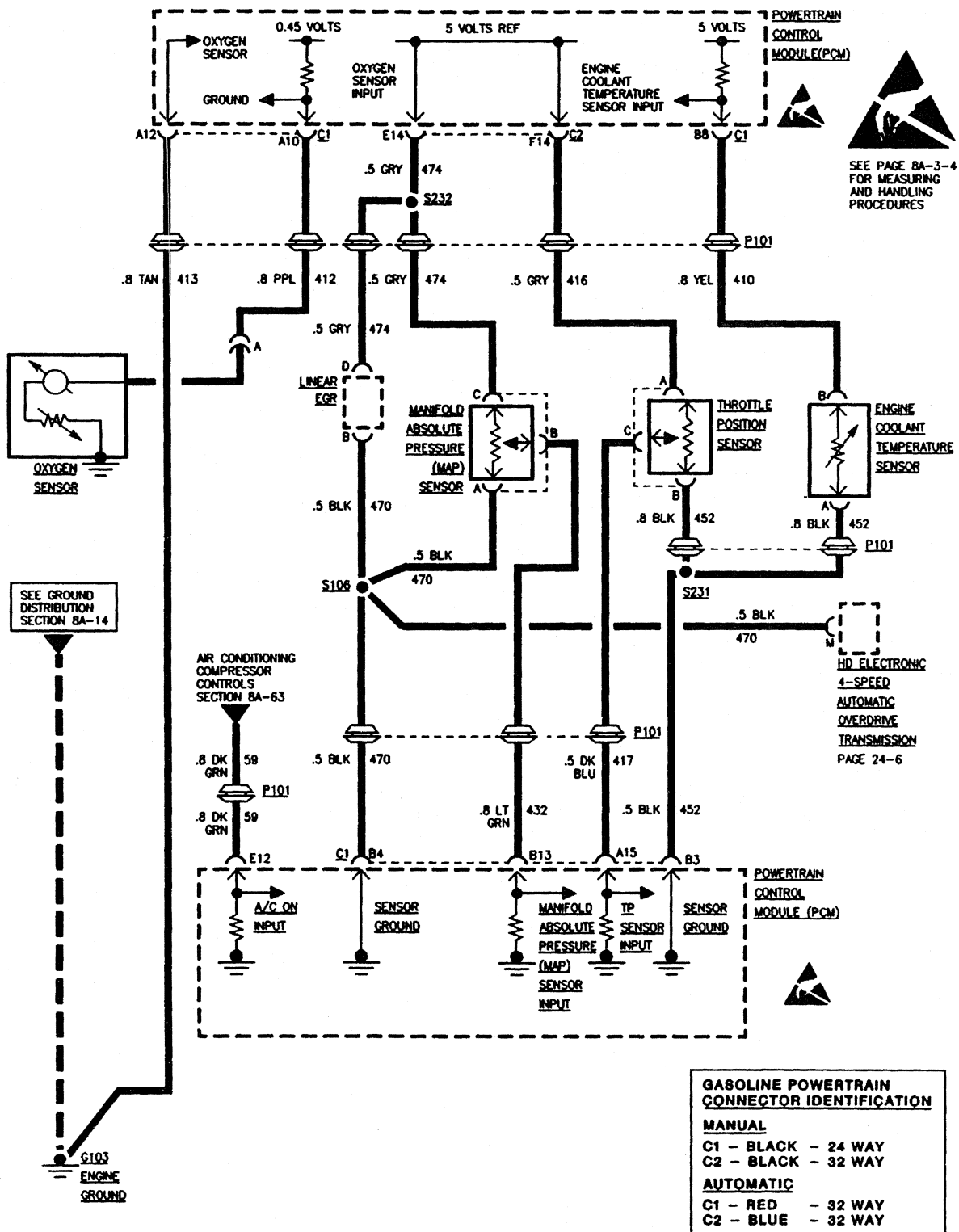
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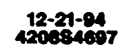
8A - 24 - 0 ELECTRICAL DIAGNOSIS

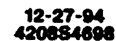
ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N



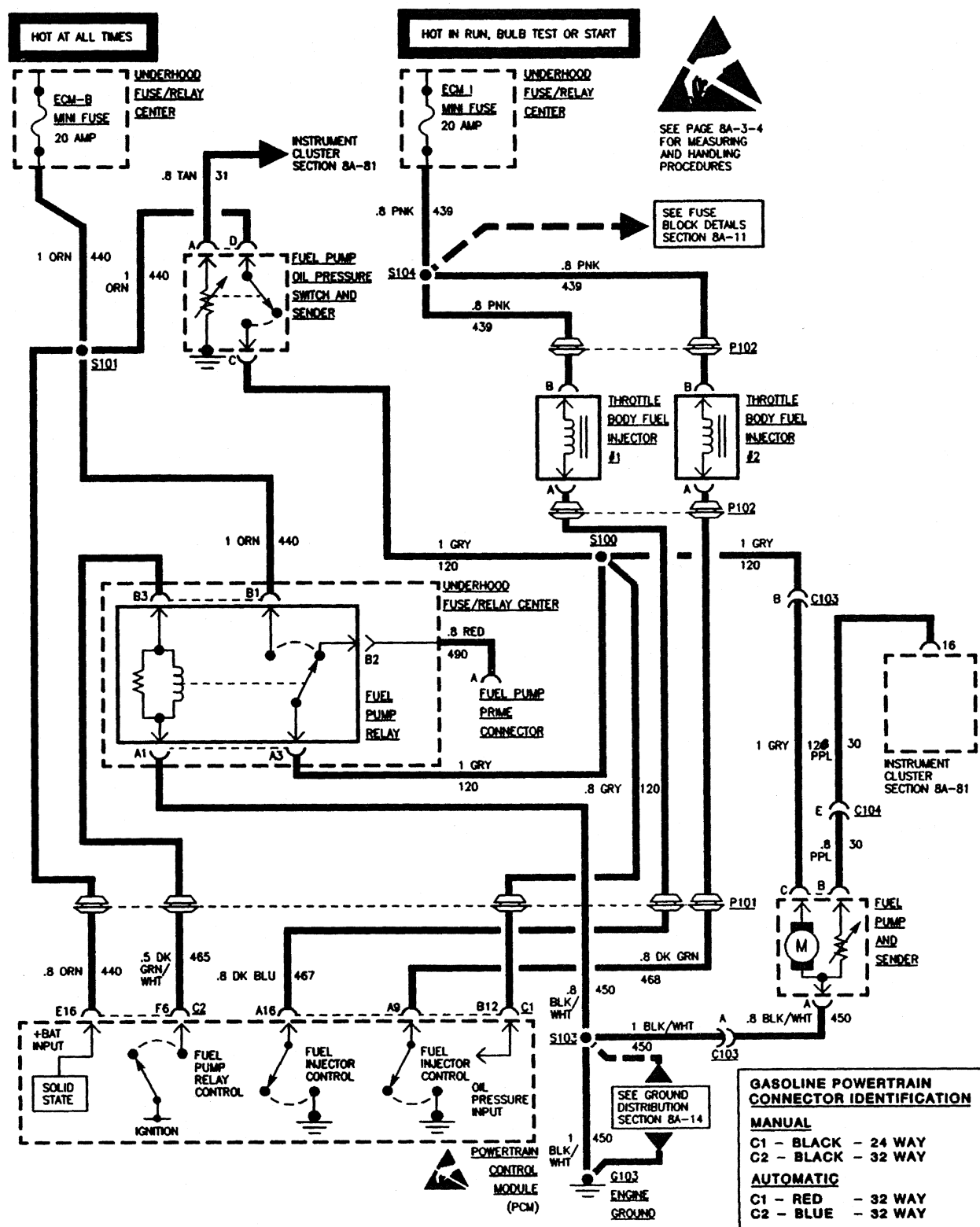
ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N



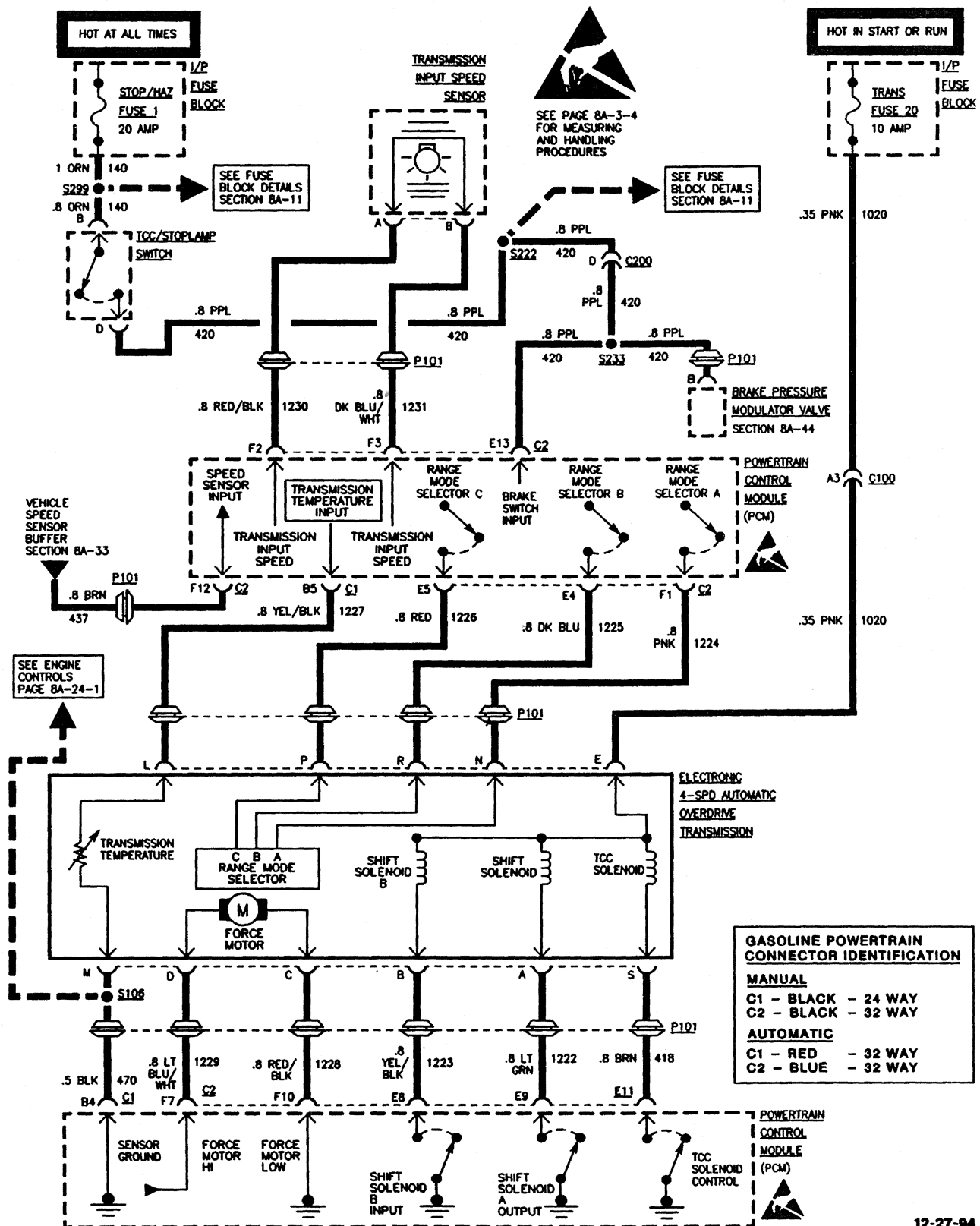




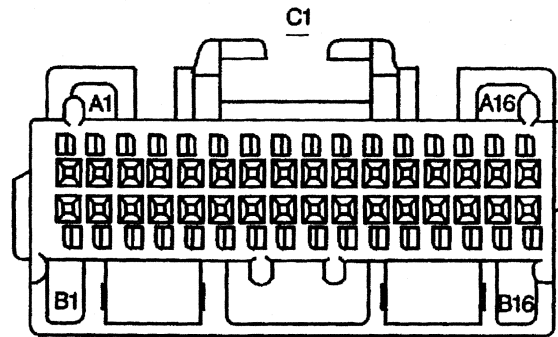
ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N



ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N



ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N



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32 - WAY F MICRO - PACK 100 SERIES
DK RED

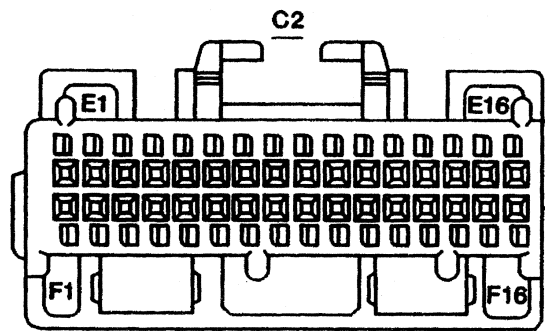
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CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	BLK/WHT	.8	451	SYSTEM GROUND
A2	TAN/WHT	.8	551	SYSTEM GROUND
A3	LT BLU/WHT	.5	1747	STEPPER COIL A HIGH
A4	PPL/WHT	.8	430	DISTRUBUTOR REF HIGH
A5	BLK/RED	.8	453	DISTRIBUTOR REF LOW
A6	LT BLU/BLK	.5	1748	STEPPER COIL A LOW
A7	LT GRN/BLK	.5	444	STEPPER COIL B LOW
A8	LT GRN/WHT	.5	1749	STEPPER COIL B HIGH
A9	DK GRN	.8	468	LOW SIDE INJ B
A10	PPL	.8	412	OXYGEN SENSOR HIGH
A11				NOT USED
A12	TAN	.8	413	OXYGEN SENSOR HIGH
A13				NOT USED
A14	WHT/BLK	.5	448	DLC
A15	DK BLU	.8	417	THROTTLE POSITION SENSOR
A16	DK BLU	.8	467	LOW SIDE INJ A
B1				NOT USED
B2	TAN/BLK	.8	424	IGNITION BYPASS
B3	BLK	.8	452	5V RETURN B
B4	BLK	.8	470	5V SYSTEM RETURN A
B5	YEL/BLK	.8	1227	PCM TO TRANS TEMP SENSOR

8A - 24 - 8 ELECTRICAL DIAGNOSIS**ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N**

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B6				NOT USED
B7				NOT USED
B8	YEL	.8	410	ENGINE COOLANT TEMPATURE SENSOR
B9				NOT USED
B10				NOT USED
B11				NOT USED
B12	GRA	.8	120	ELEC FUEL PUMP INPUT
B13	LT GRN	.5	432	MANIFOLD ABSOLUTE PRESSURE SENSOR
B14				NOT USED
B15	DK BLU	.8	496	KNOCK SENSOR
B16	BRN	.5	1456	LINEAR EGR POSITION INPUT

ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N



12110115

32 - WAY F MICRO - PACK 100 SERIES
BLU

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
E1	GRA	.5	435	LINEAR EGR OUTPUT
E2	TAN/BLK	.5	456	UPSHIFT LAMP
E3				NOT USED
E4	DK BLU	.8	1225	PCM TRANS RANGE MODE B
E5	RED	.8	1226	PCM TRANS RANGE MODE C
E6	BRN/WHT	.5	419	MALFUNCTION INDICATOR LAMP
E7				NOT USED
E8	YEL/BLK	.8	1223	PCM TRANS SHIFT SOL B
E9	LT GRN	.8	1222	PCM TRANS SHIFT SOL A
E10	DK GRN	.8	534	THROTTLE ACTUATOR SOLENOID OUTPUT
E11	BRN	.8	418	TCC SOLENOID CONTROL
E12	DK GRN	.8	59	AIR CONDITIONING
E13	PPL	.5	420	BRAKE SW TO PCM
E14	GRA	.5	474	5V REF VOLTAGE
E15	PNK	.8	439	12V IGNITION FUSED
E16	ORN	.8	440	12 BATTERY FUSED
F1	PNK	.8	1224	PCM TRANS RANGE MODE A
F2	RED/BLK	.8	1230	TRANSMISSION INPUT SPEED SENSOR
F3	DK BLU/WHT	.8	1231	TRANSMISSION INPUT SPEED SENSOR
F4				NOT USED
F5				NOT USED

ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
F6	DK GRN/WHT	.5	465	FUEL PUMP RELAY DRIVE
F7	LT BLU/WHT	.8	1229	PCM TRANS FORCE MTR LOW
F8	DK BLU	.5	1694	SHIFT PERFORMANCE SELECT SWITCH INPUT
F9	TAN	.5	800	DLC SERIAL DATA
F10	RED/BLK	.8	1228	PCM TRANS FORCE MOTOR HIGH
F11	WHT	.8	423	IGNITION CONTROL (IC)
F12	BRN	.5	437	VEHICLE SPEED BUFFER SIGNAL
F13	DK BLU	.5	1716	VEHICLE SPEED SENSOR BUFFER SIGNAL
F14	GRA	.5	416	5V SENSOR REF
F15	PNK	.8	439	12V IGN FUSED
F16	DK GRN/YEL	.5	428	EVAPORATIVE CANISTER PURGE CONTROL

COMPONENT	LOCATION	201-PG	FIG.	CONN
Data Link Connector (DLC)	Under LH side of I/P	30.....	36	
Distributor Ignition Control (DIC) Module Connector	Rear LH lower portion of distributor module	11.....	14	
Electronic 4-speed Automatic Overdrive Transmission.....	Attached to rear of engine			
Engine Coolant Temperature Sensor (VIN N)	Front of intake manifold.....	12.....	15	
Evaporative Canister Purge Solenoid.....	RH side of engine.....	9.....	12	
Fuel Pump and Sender	In fuel tank			
Fuel Pump Oil Pressure Switch and Sender (VIN N).....	LH lower front of engine, near damper pulley	12.....	15	
Fuel Pump Relay	In underhood fuse and relay center			
I/P Fuse Block - I/P Harness....	Lower LH side of I/P	26.....	31	
Idle Air Control (IAC) Valve (VIN N).....	Attached to RH rear of throttle body.....	12.....	15	
Ignition Coil (VIN N)	Center rear of engine	12.....	15	
Instrument Cluster.....	LH upper end of I/P			
Knock Sensor (VIN N)	LH rear portion of cylinder casting.....	12.....	15	
Linear Exhaust Gas Recirculation (EGR) Solenoid	LH top rear of engine, above valve cover			
Manifold Absolute Pressure (MAP) Sensor (VIN N)	Rear top center of engine.....	12.....	15	

ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N

COMPONENT	LOCATION	201-PG	FIG.	CONN
Oxygen Sensor (exhaust pipe, VIN H, K & Z).....	In exhaust pipe, near crossover.....	20	23	
Powertrain Control Module (PCM).....	Under RH end of I/P, above blower motor	29	34	
TCC/Stoplamp Switch.....	Top of brake pedal.....	34	39	
Throttle Actuator Solenoid	At throttle body unit			
Throttle Body Injectors (1 & 2)	Top of throttle body unit			
Throttle Position (TP) Sensor (VIN N).....	RH side of throttle body	12	15	
Transmission Input Speed Sensor	LH side of transmission			
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7	10	
C103.....	LH rear of engine compartment at bulkhead.....	7	10	
C104.....	LH rear of engine compartment, under brake master cylinder			
C200.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28	33	
GROUND:				
G103 (VIN N).....	LH front of engine near thermostat housing.....	12	15	
G104 (VIN N).....	LH front of engine near thermostat housing.....	12	15	
GROMMETS:				
P101	RH rear of engine compartment, at bulkhead			
P102	Engine compartment, on throttle body			
SPLICES:				
S100 (VIN Z, H, K, N)	Engine harness, approx. 11 cm from under hood lamp connector breakout			
S101 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from under hood lamp connector breakout			
S102 (VIN N)	In ignition coil breakout, approx. 10 cm from engine harness			
S103 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator cable breakout			
S104 (VIN Z, H, K, N)	In generator breakout, approx. 16 cm from main engine harness			
S106 (VIN N)	Engine harness, approx. 17 cm into generator breakout			
S108 (VIN N)	Engine harness, approx. 7 cm from windshield washer motor breakout			
109 (VIN Z, N)	Engine harness, approx. 25 cm from C100			
S213	I/P harness, approx. 16 cm right of fuse block breakout			
S215	I/P harness, approx. 8 cm right of I/P cluster breakout			

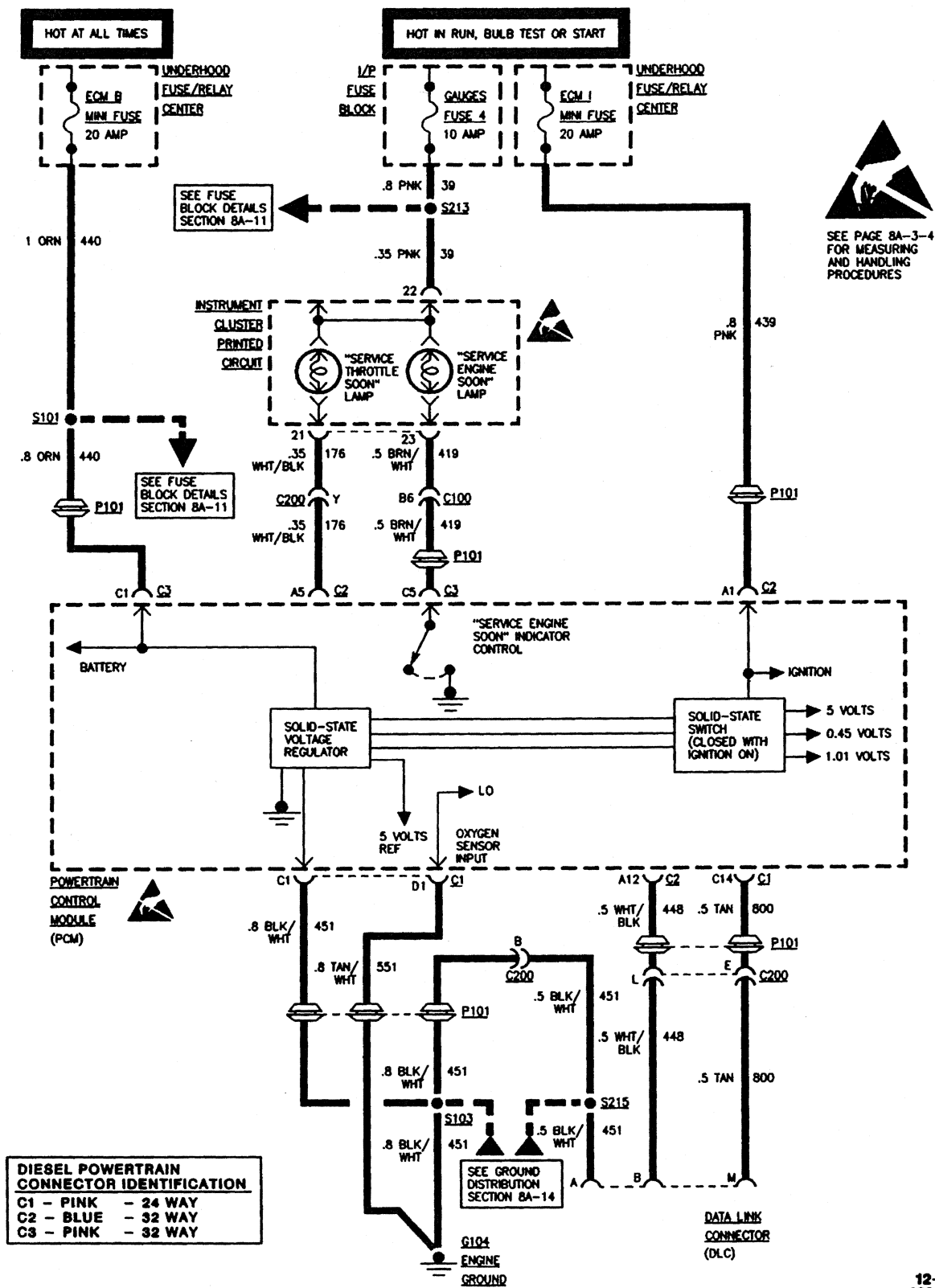
8A - 24 - 12 ELECTRICAL DIAGNOSIS

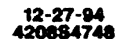
ENGINE CONTROLS - THROTTLE BODY INJECTION 7.4L VIN N

COMPONENT	LOCATION	201-PG FIG.	CONN
S222	I/P harness, approx. 20 cm right of turn signal flasher breakout		
S231 (VIN Z, H, K, N)	Engine harness, approx. 4 cm from C200 breakout		
S232 (VIN N)	Engine harness, approx. 16 cm from P101		
S233 (VIN N w/MT1)	Engine harness, approx. 30 cm from P101		
S251 (Suburban) (base only)	Crossbody harness, 8 cm right of LH door breakout		
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout		
S251 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 6 cm left of LH seat breakout		

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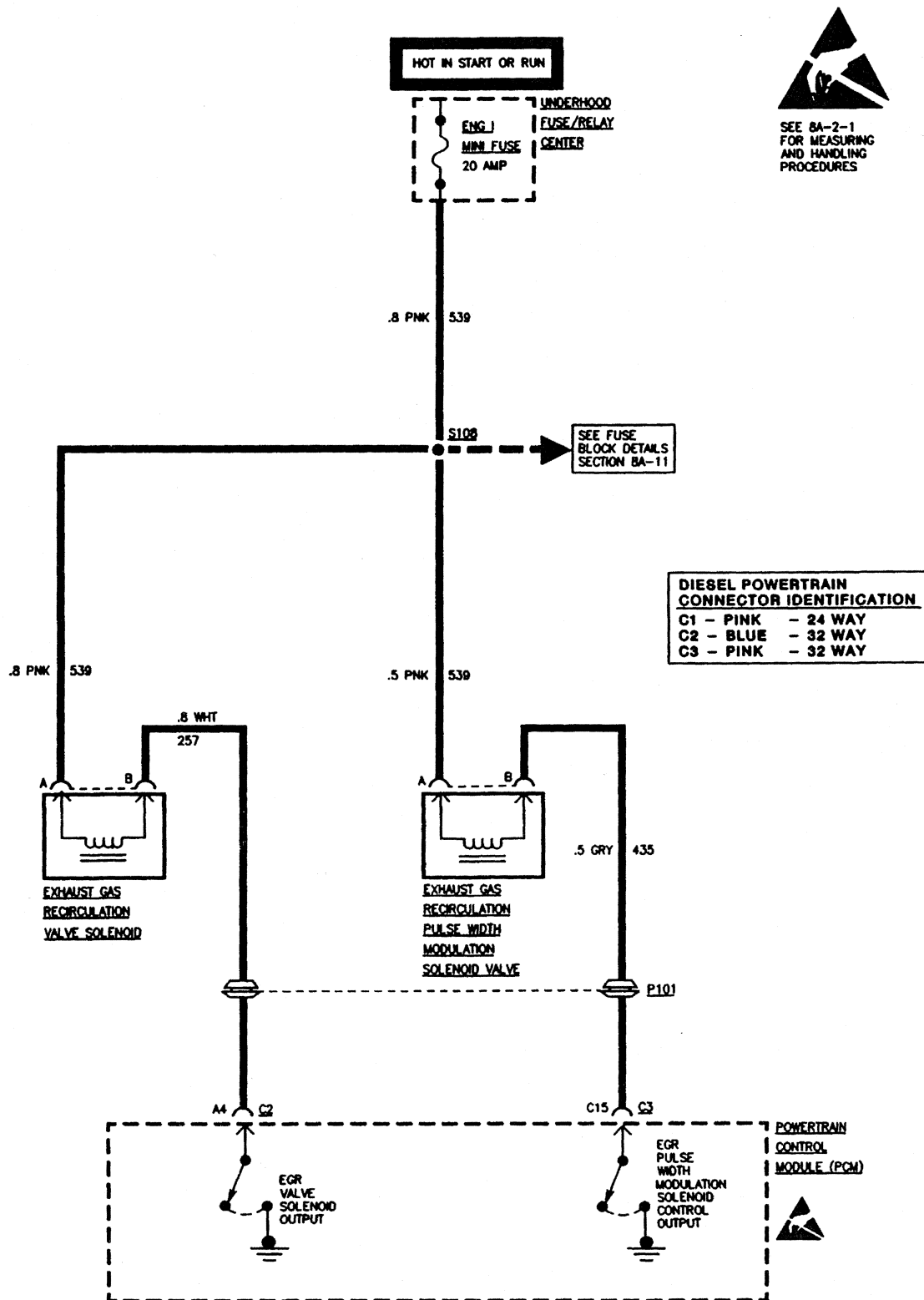
ENGINE CONTROLS - 6.5L DIESEL VIN P

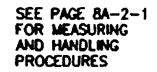




8A - 25 - 2 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - 6.5L DIESEL VIN P

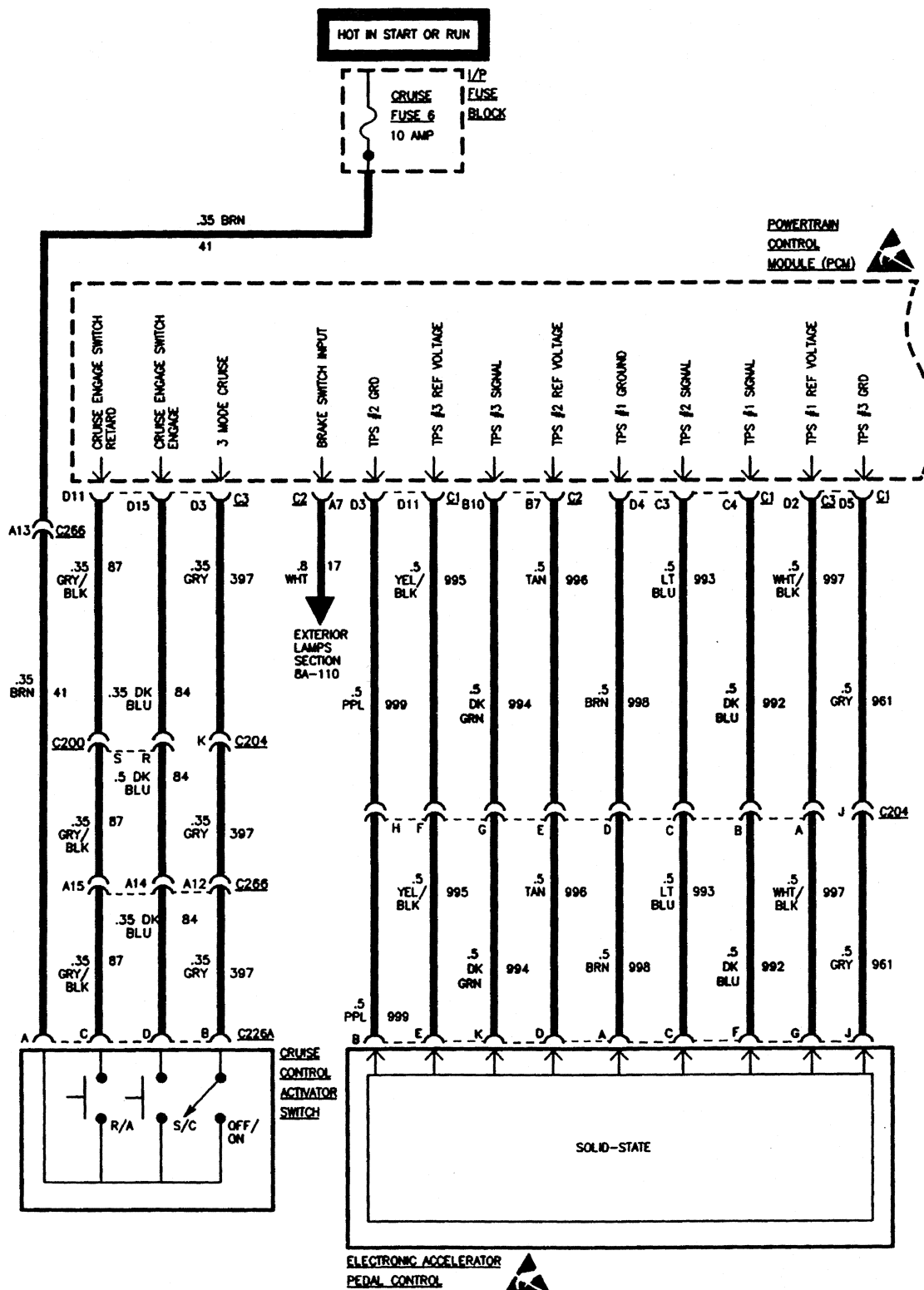




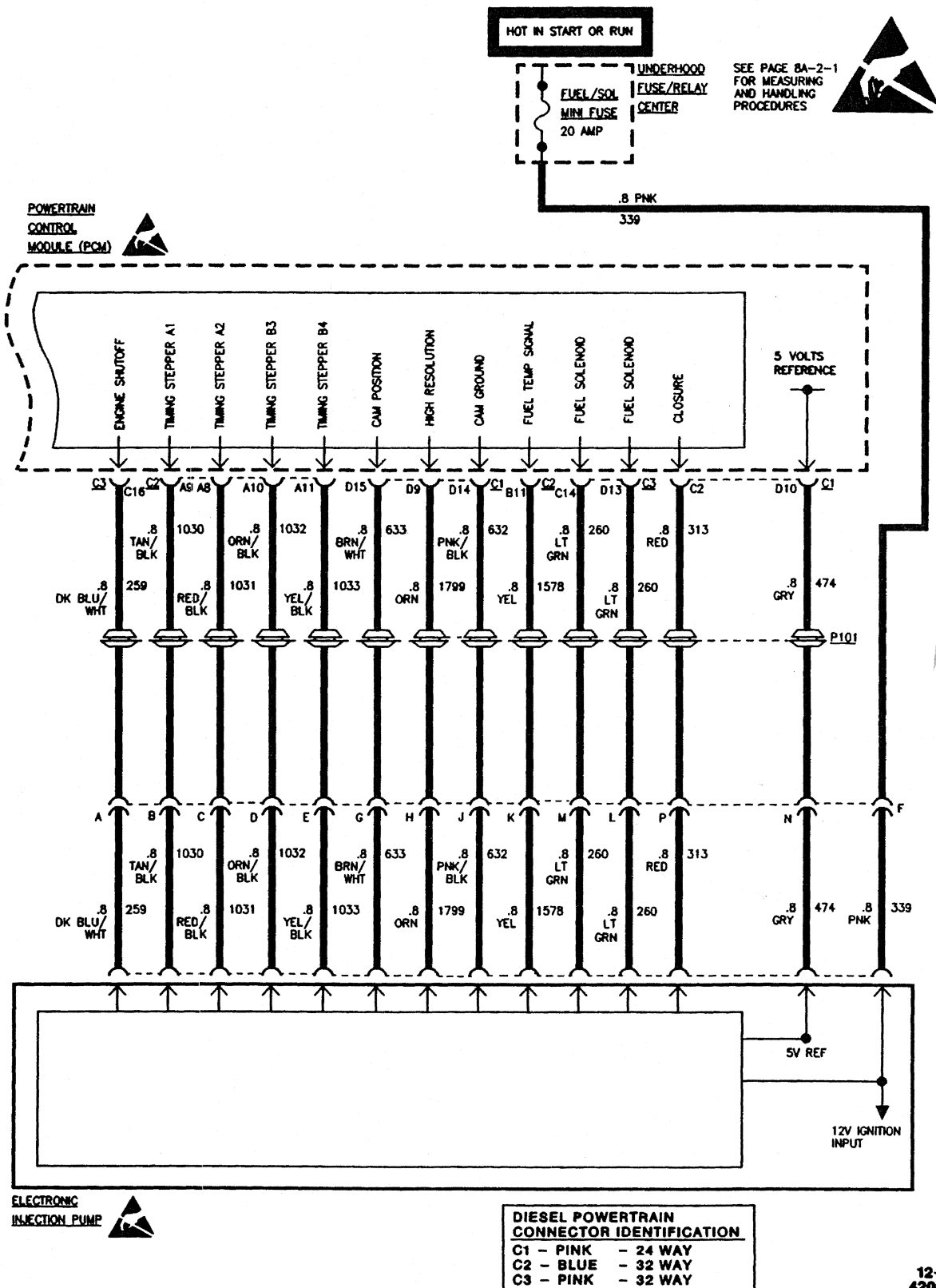
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8A - 25 - 4 ELECTRICAL DIAGNOSIS

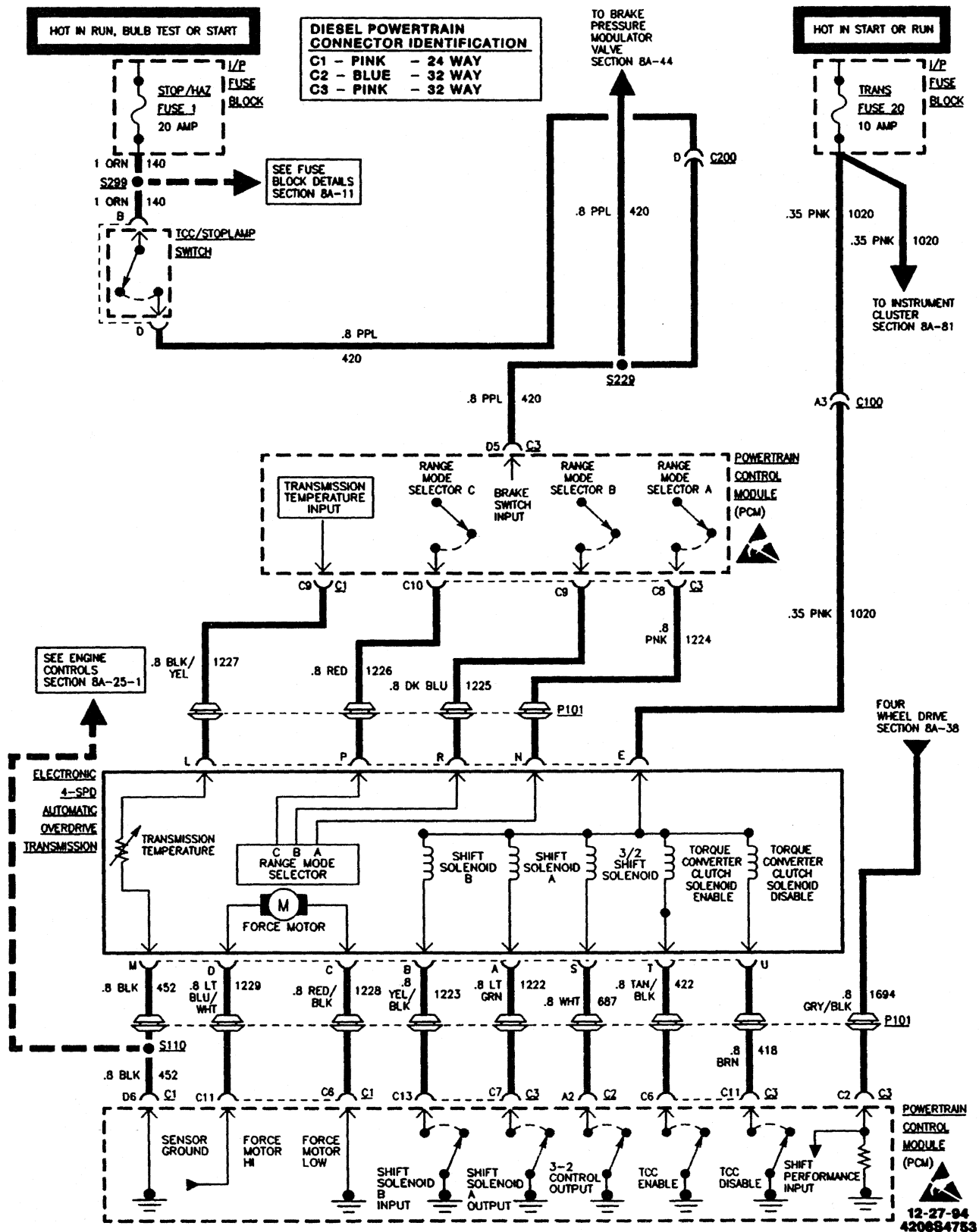
ENGINE CONTROLS - 6.5L DIESEL VIN P



ENGINE CONTROLS - 6.5L DIESEL VIN P

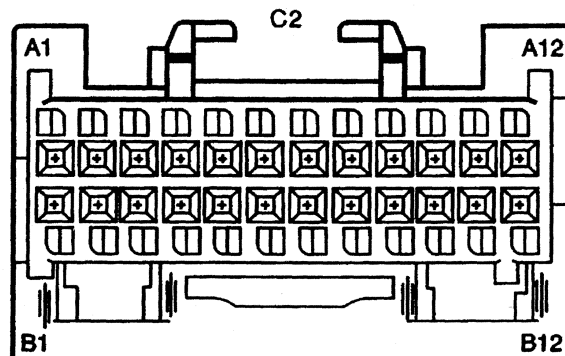


ENGINE CONTROLS - 6.5L DIESEL VIN P



8A - 25 - 8 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - 6.5L DIESEL VIN P



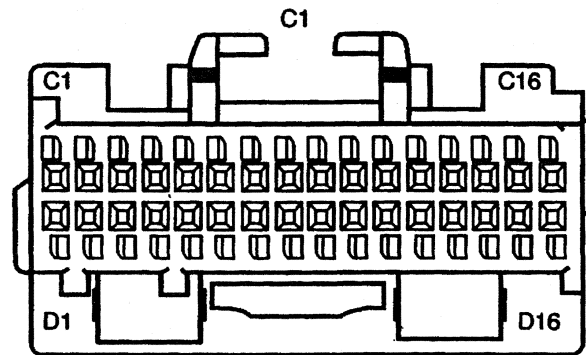
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24 - WAY F MICRO - PACK 100 SERIES
PNK

4508S3387

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	PNK	.8	439	12V IGNITION (FUSED)
††A2	WHT	.8	687	3/2 SHIFT CONTROL OUTPUT
A3				NOT USED
A4	WHT	.8	257	EGR VENT SOLENOID
A5	WHT/BLK	.35	176	"SERVICE THROTTLE" LAMP OUTPUT
A6				NOT USED
A7	WHT	.8	17	STOPLAMP SWITCH INPUT
A8	RED/BLK	.8	1031	TIMING STEPPER A2
A9	TAN/BLK	.8	1030	TIMING STEPPER A1
A10	ORN/BLK	.8	1032	TIMING STEPPER B3
A11	YEL/BLK	.8	1033	TIMING STEPPER B4
A12	WHT/BLK	.5	448	NO DIAGNOSTIC ENABLE
B1				NOT USED
B2				NOT USED
B3				NOT USED
B4	DK GRN	.8	59	N A/C ON INPUT
B5				NOT USED
B6				NOT USED
B7	TAN	.5	996	REFERENCE VOLTAGE TPS2
B8	DK BLU	.5	507	GLOW PLUG "WAIT" LAMP OUTPUT
B9				NOT USED

ENGINE CONTROLS - 6.5L DIESEL VIN P

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B10	DK GRN	.5	994	TPS 3 SIGNAL INPUT
B11	YEL	.8	1578	FUEL TEMPERATURE INPUT
B12	TAN	.8	472	INTAKE MANIFOLD AIR TEMPERATURE
†† WITH M30 AUTO TRANS ONLY				



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32 - WAY F MICRO - PACK 100 SERIES
PNK

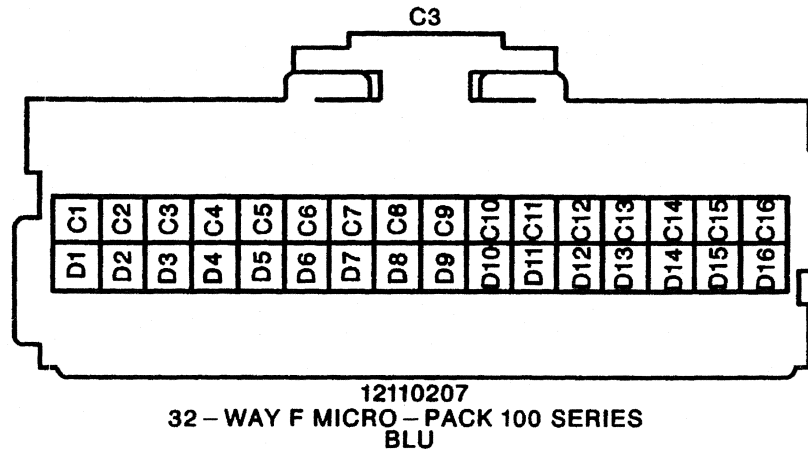
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CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1	BLK/WHT	.8	451	SYSTEM GROUND
C2	RED	.8	313	CLOSURE SIGNAL
C3	LT BLU	.5	993	TPS 2 SIGNAL
C4	DK BLU	.5	992	TPS 1 SIGNAL
C5	GRY/BLK	.8	433	BAROMETRIC PRESSURE SENSOR INPUT
†C6	RED/BLK	.8	1228	TRANS FORCE MOTOR HIGH
C7	LT GRN	.5	432	MANIFOLD ABSOLUTE PRESSURE SENSOR INPUT
C8	YEL	.8	410	COOLANT TEMPERATURE
†C9	YEL/BLK	.8	1227	TRANS TEMPERATURE INPUT
C10	GRY	.8	416	+5 VOLT REFERANCE
†C11	LT BLU/WHT	.8	1229	TRANS FORCE MOTOR LOW
C12				NOT USED
C13	YEL	.8	505	GLOW PLUG RELAY
C14	TAN	.5	800	SERIAL DATA

8A - 25 - 10 ELECTRICAL DIAGNOSIS**ENGINE CONTROLS - 6.5L DIESEL VIN P**

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C15	BRN	.5	437	VEHICLE SPEED SENSOR INPUT
C16				NOT USED
D1	TAN/WHT	.8	551	ENGINE GROUND
D2	BLK	.8	491	CLOSURE GROUND
D3	PPL	.5	999	TPS 2 GROUND
D4	BRN	.5	998	NO TPS 1 GROUND
D5	GRY	.5	961	TPS 3 GROUND
D6	BLK	.8	452	NO TRANS TEMPERATURE/PRESSURE REFERENCE LOW
D7				NOT USED
D9	ORN	.8	1799	NOT TPS 2 SIGNAL
D10	GRY	.8	474	5+ VOLT REFERENCE
D11	YEL/BLK	.5	995	REFERENCE VOLTAGE TPS 3
D12				NOT USED
D13	YEL	.8	643	CRANK SENSOR
D14	PNK/BLK	.8	632	CAM POSITION SENSOR GROUND
D15	BRN/WHT	.8	663	CAM POSITION SENSOR
D16				NOT USED
† W/AUTO TRANS ONLY				

ENGINE CONTROLS - 6.5L DIESEL VIN P



4508S3519

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1	ORN	.8	440	12V + BATTERY
† C2	GRY/BLK	.8	1694	4WD INPUT
C2	TAN/BLK	.5	456	CRUISE INPUT (MANUAL ONLY
C3				NOT USED
C4				NOT USED
C5	BRN/WHT	.5	419	"SERVICE ENGINE SOON" LAMP OUTPUT
††C6	TAN/BLK	.8	422	TORQUE CONVERTER CLUTCH
†C7	LT GRN	.8	1222	TRANS SHIFT SOLENOID A
†C8	PNK	.8	1224	TRANS RANGE MODE A
†C9	DK BLU	.8	1225	TRANS RANGE MODE B
†C10	RED	.8	1226	TRANS RANGE MODE C
††C11	BRN	.8	418	TCC PWM SOLENOID CONTROL
C12				NOT USED
†C13	YEL/BLK	.8	1223	TRANS FLUID SOLENOID B
C14	LT GRN	.8	260	FUEL SOLENOID
C15	GRY	.5	435	EGR SOLENOID
C16	259	.8	DK BLU/WHT	FUEL SHUTOFF

W/AUTO TRANS ONLY
† WITH M30 AUTO TRANS ONLY

8A - 25 - 12 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS - 6.5L DIESEL VIN P

COMPONENT	LOCATION	201-PG	FIG.	CONN
A/C Compressor.....	RH front of engine			
A/C High Pressure Cutout Switch (VIN P).....	On rear portion of A/C compressor			
Barometric Pressure Sensor (VIN P, F, S)	Upper LH side of cowl, next to wiper motor			
Engine Coolant Temperature Sensor (VIN P, F, S).....	LH lower front of engine block.			
Crank Sensor	Inside electronic injection pump			
Cruise Control Switch	In turn signal lever			
Cruise Control Clutch Pedal Position Switch.....	Under I/P, left of steering column on clutch pedal support bracket	26.....	31	
Data Link Connector (DLC)	Under LH side of I/P	30.....	36	
Electronic Accelerator Control Module (Diesel).....	Includes accelerator pedal			
Electronic Injection Pump	Top front of engine			
Electronic 4-Speed Automatic Overdrive Transmission.....	Attached to rear of engine			
Exhaust Gas Recirculation (EGR) Vent Solenoid (VIN P, S).....	RH side of throttle body assembly.....	12.....	15	
Exhaust Gas Recirculation (EGR)Vent Valve Solenoid (6.5L) Diesel VIN P, S Only	LH rear top of engine, above valve cover			
Fuel Heater	Top rear of engine.....	14.....	17	
Fuel Lift Pump (Diesel)	Inside LH frame rail, below driver's door			
Fuel Pump Oil Pressure Switch and Sender (VIN P, F, S)	LH rear of engine, at 2 o'clock position			
Fuel Pump Relay	In underhood fuse and relay center			
I/P Fuse Block - I/P Harness....	Lower LH side of I/P.....	26.....	31	
Glow Plugs Controller (VIN P, F, S)				
Glow Plugs (VIN P, F, S)				
Instrument Cluster.....	LH upper end of I/P			
Intake Manifold Air Temperature Sensor	At front of engine			
Manifold Absolute Pressure (MAP) Sensor (Diesel).....	On bulkhead, RH of steering column			
Powertrain Control Module (PCM).....	Under RH end of I/P, above blower motor	34		
TCC/Stoplamp Switch	Top of brake pedal.....	34.....	39	

ENGINE CONTROLS - 6.5L DIESEL VIN P

COMPONENT	LOCATION	201-PG	FIG.	CONN
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5	8	
Vehicle Speed Sensor Buffer.....	Under RH end of I/P	30	35	
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead	7	10	
C200.....	Behind RH portion of I/P, near heater motor, in foam wrap	28	33	
C204.....	Behind RH portion of I/P.....	31	37	
C266.....	LH side of steering column, near bulkhead.....	26	31	
GROUND:				
G104 (VIN P)	RH top of cylinder head, near center.....	15	18	
G105 (VIN P)	RH top rear of cylinder head.....	15	18	
G200.....	Behind LH side of I/P, below fuse block			
GROMMETS:				
P100	LH rear of engine compartment at bulkhead.....	7	10	
P101	RH rear of engine compartment, at bulkhead			
SPLICES:				
S100 (VIN P).....	Engine harness, 5 cm from generator breakout			
S101 (VIN P).....	Engine harness, 10 cm from generator breakout			
S103 (VIN P).....	Engine harness, 10 cm from underhood lamp breakout			
S105 (VIN P).....	Engine harness, 4 cm from A/C high pressure switch breakout			
S107 (VIN P).....	Engine harness, 5 cm from transmission harness breakout			
S108 (VIN P).....	Engine harness, 5 cm from transmission harness breakout			
S110 (VIN P).....	Engine harness, 15 cm from generator breakout			
S117 (VIN P).....	Engine harness, 5 cm into forward lamps breakout			
S135 (VIN P).....	Engine harness, at glow plug controller			
S136 (VIN P).....	Engine harness, at glow plug controller			
S137 (VIN P).....	Engine harness, 39 cm into A/C compressor clutch breakout			
S138 (VIN P).....	Engine harness, 7 cm into generator breakout			
S139 (VIN P).....	Engine harness, 22 cm from C100			
S140 (VIN P).....	Engine harness, 45 cm from underhood lamp breakout			
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S213 (Diesel).....	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout			
S215	I/P harness, approx. 8 cm right of I/P cluster breakout			
S218	I/P harness, approx. 4 cm right of turn signal flasher			
S229 (VIN P).....	Engine harness, under RH side of I/P 18 cm from P101			

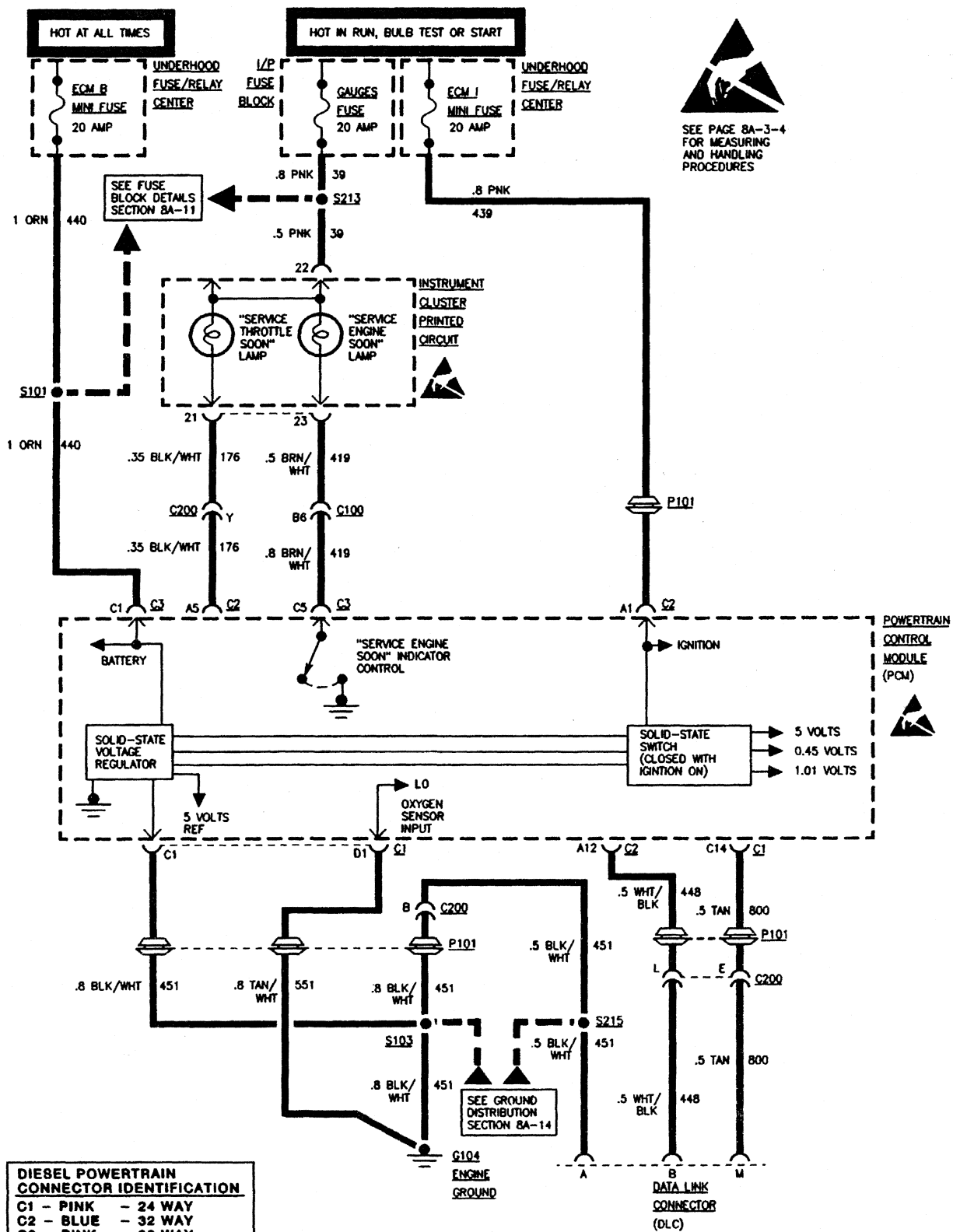
8A - 25 - 14 ELECTRICAL DIAGNOSIS

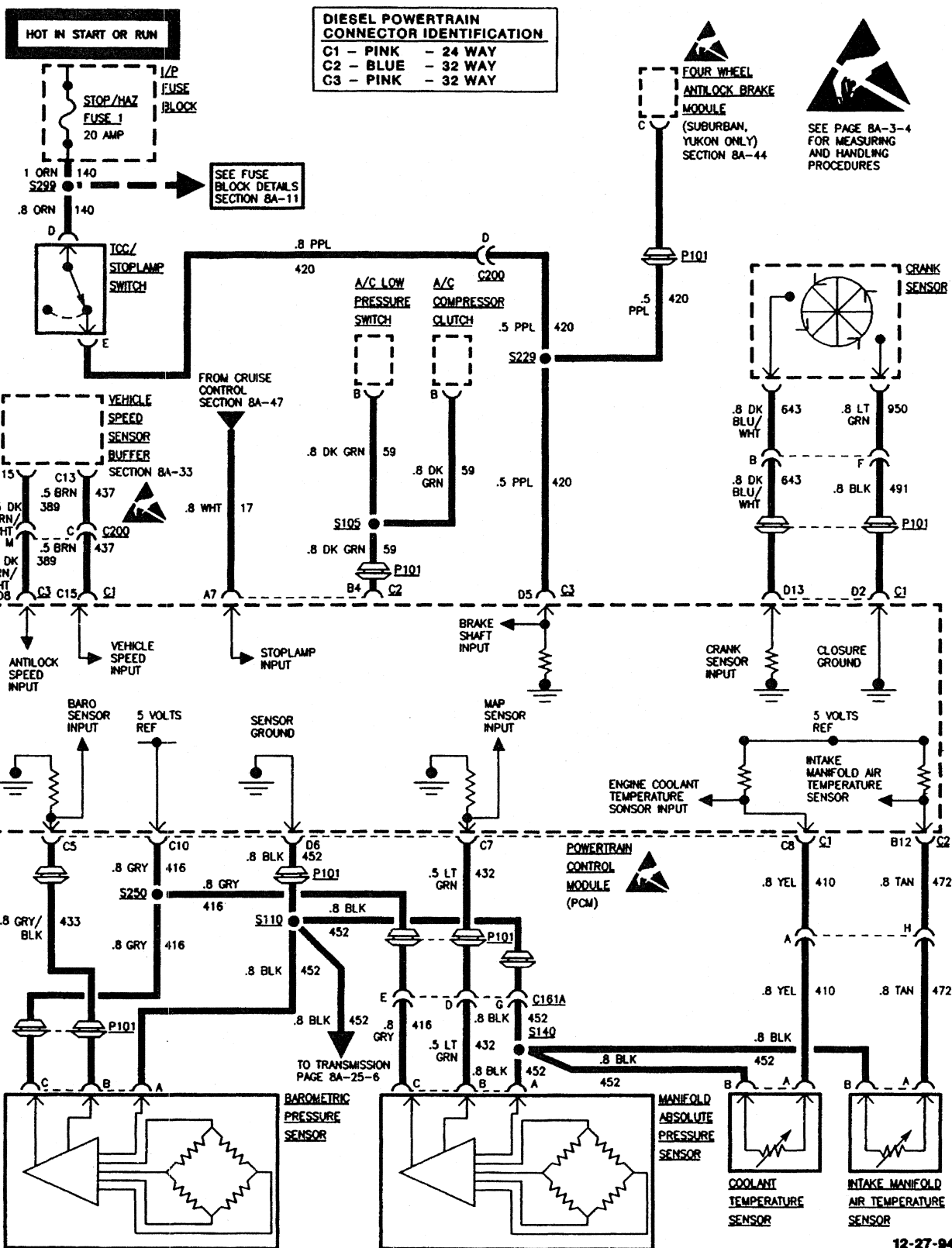
ENGINE CONTROLS - 6.5L DIESEL VIN P

COMPONENT	LOCATION	201-PG FIG.	CONN
S230 (VIN P)	Engine harness, under RH side of I/P 32 cm from P101		
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout		
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout		
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout		

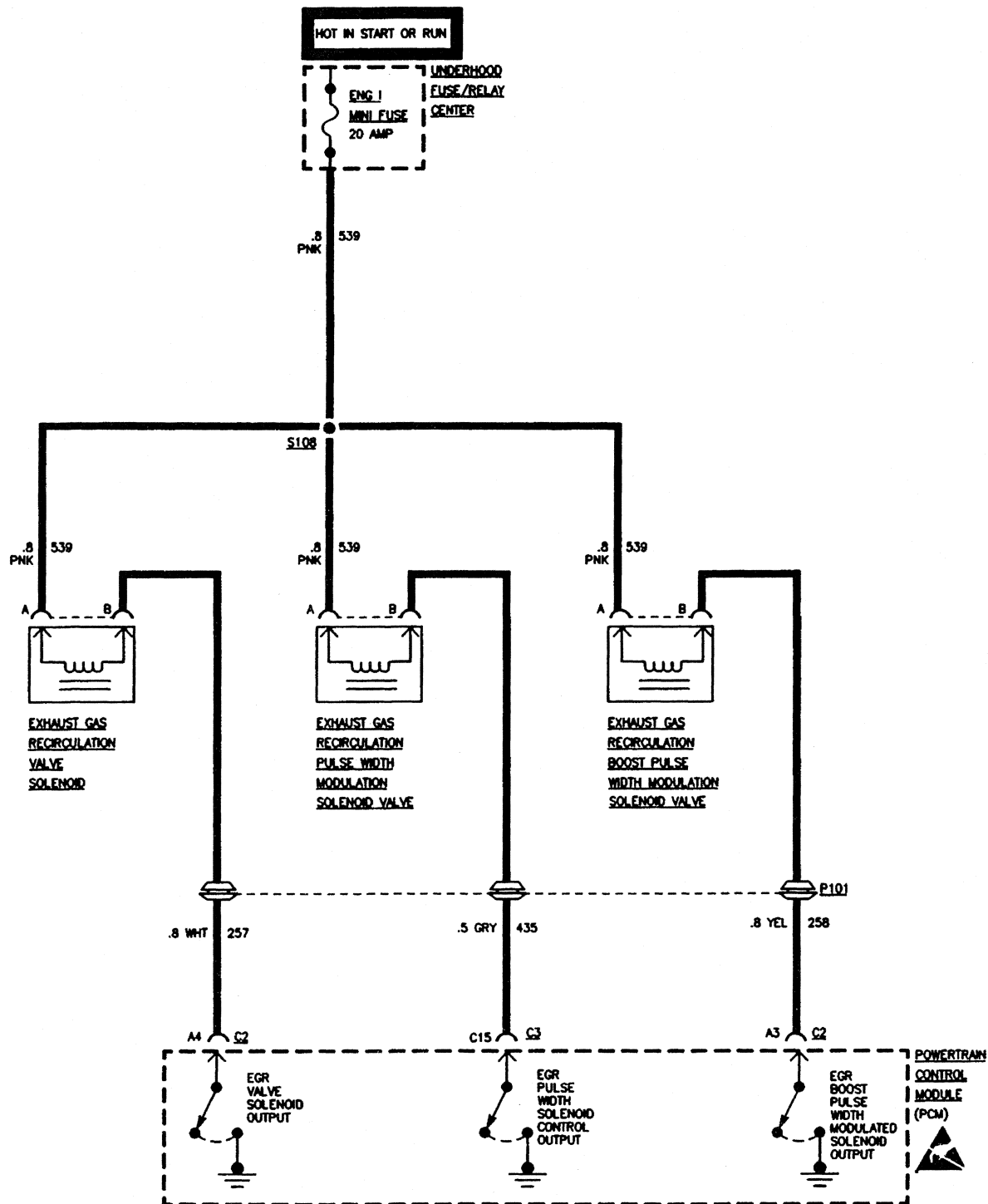
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ENGINE CONTROLS 6.5 DIESEL VIN S





ENGINE CONTROLS 6.5 DIESEL VIN S



DIESEL POWERTRAIN CONNECTOR IDENTIFICATION		
C1 - PINK	-	24 WAY
C2 - BLUE	-	32 WAY
C3 - PINK	-	32 WAY

ENGINE CONTROLS 6.5 DIESEL VIN S



**DIESEL POWERTRAIN
CONNECTOR IDENTIFICATION**

C1 - PINK - 24 WAY
 C2 - BLUE - 32 WAY
 C3 - PINK - 32 WAY

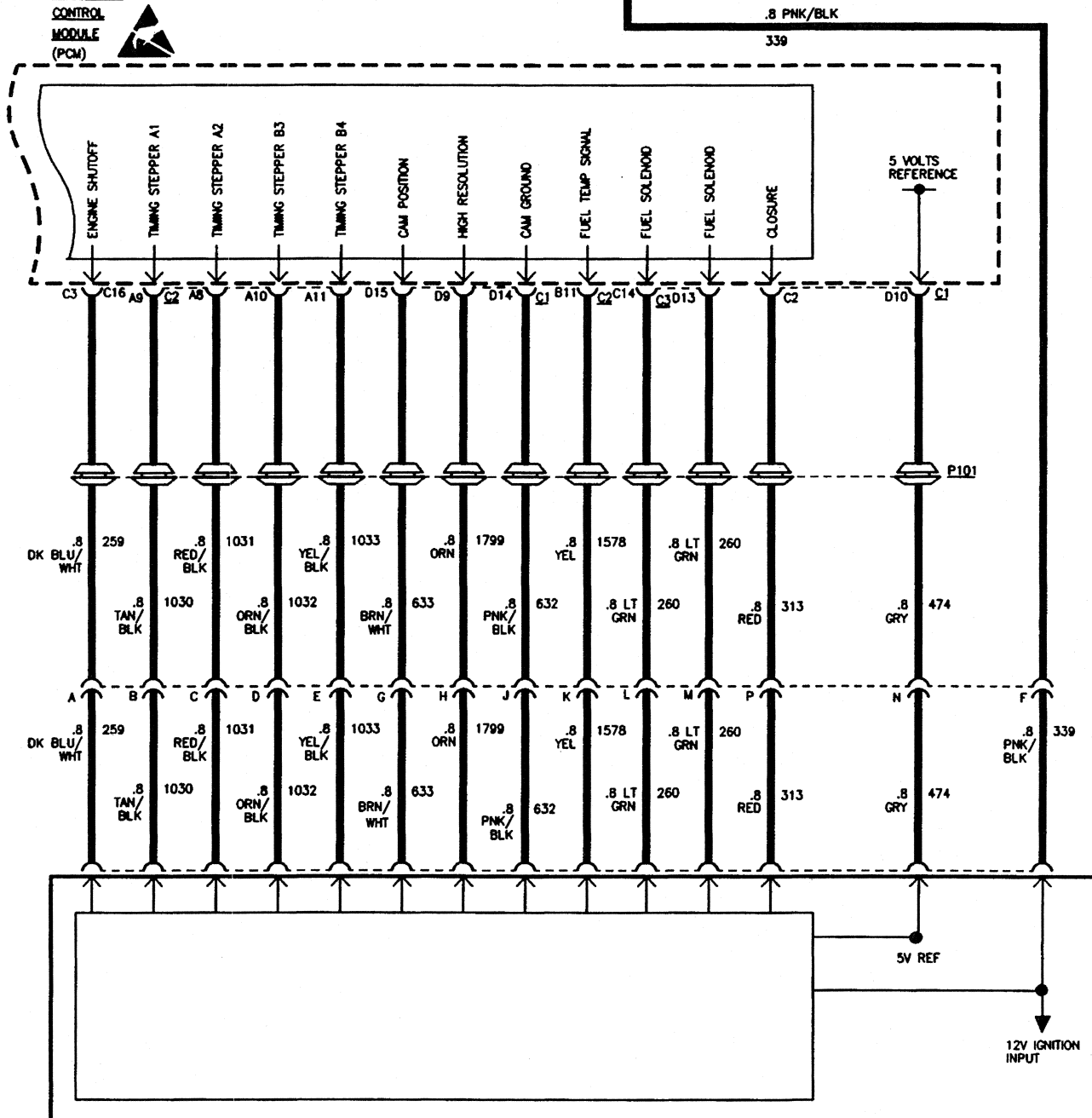
HOT IN START OR RUN

FUSE
 BLOCK
 FUEL/SOL
 MINI FUSE
 20 AMP



SEE PAGE 8A-3-4
 FOR MEASURING
 AND HANDLING
 PROCEDURES

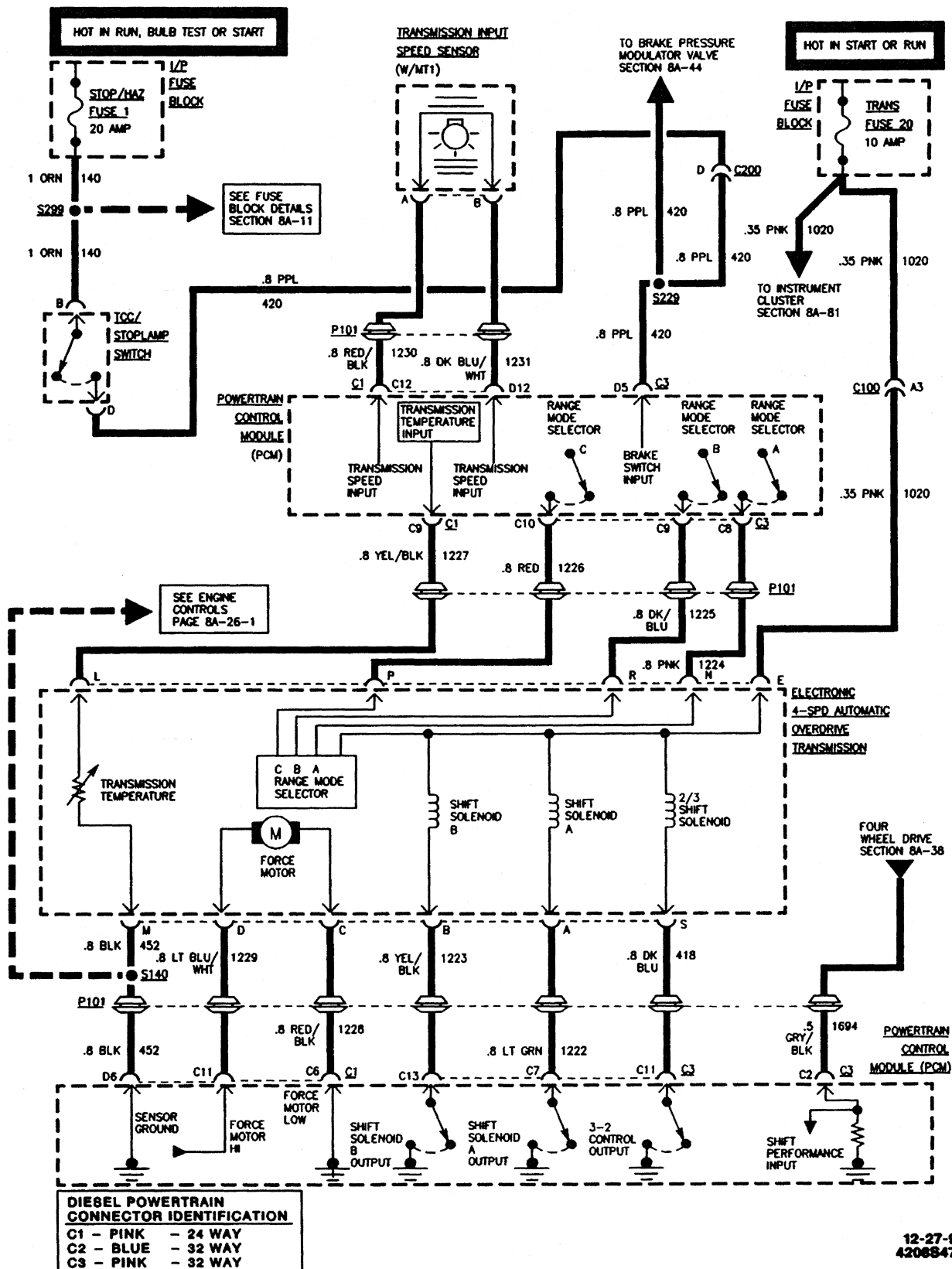
POWERTRAIN
 CONTROL
 MODULE
 (PCM)

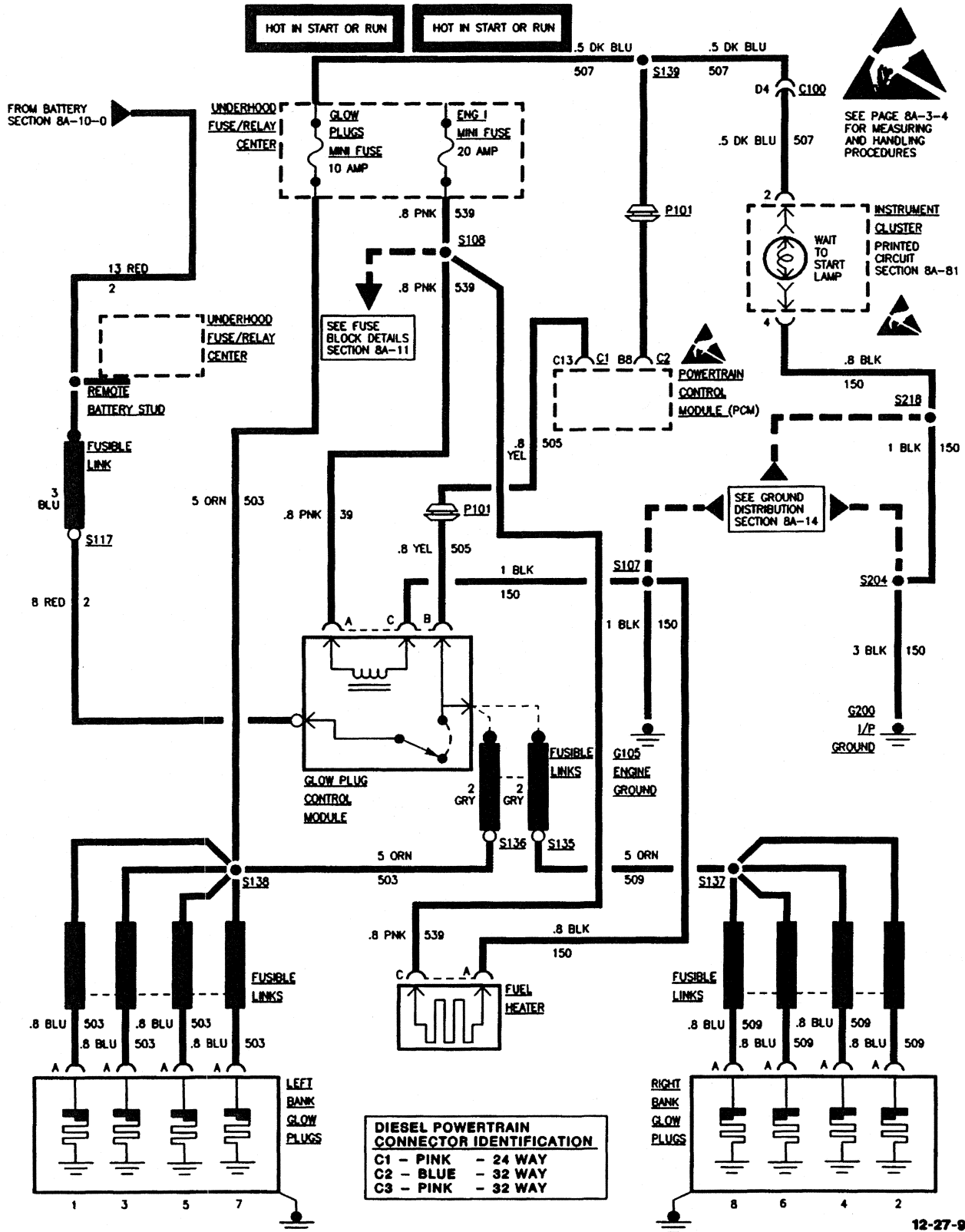


ELECTRONIC
 INJECTION PUMP

12-27-94
 420684744

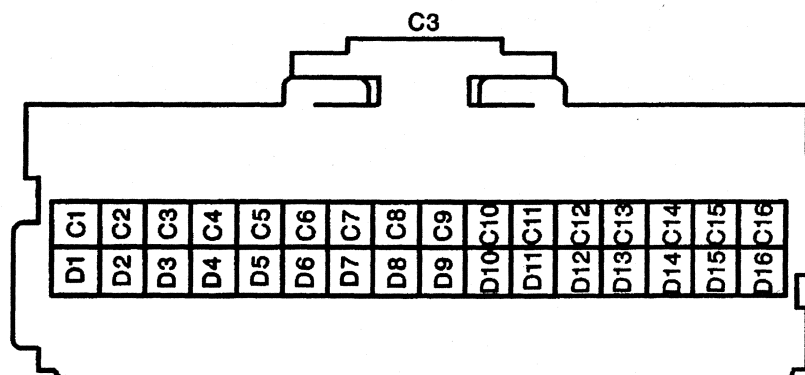
ENGINE CONTROLS 6.5 DIESEL VIN S





8A - 26 - 8 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS 6.5 DIESEL VIN S



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32 - WAY F MICRO - PACK 100 SERIES
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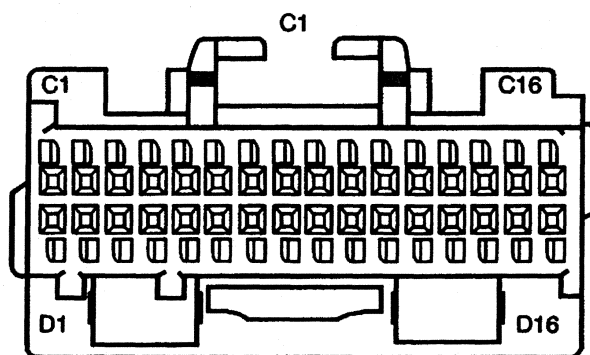
4508S3519

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1	ORN	.8	440	12V+BATTERY
C2	GRY/BLK	.5	1694	4WD INPUT
C3				NOT USED
C4				NOT USED
C5	BRN/WHT	.5	419	"SERVICE ENGINE SOON" LAMP OUTPUT
C6				NOT USED
C7	LT GRN	.8	1222	TRANS SHIFT SOLENOID A
C8	PNK	.8	1224	TRANS RANGE MODE A
C9	DK BLU	.8	1225	TRANS RANGE MODE B
C10	RED	.8	1226	TRANS RANGE MODE C
C11	BRN	.8	418	3/2 SHIFT CONTROL
C12				NOT USED
C13	YEL/BLK	.8	1223	TRANS SHIFT SOLENOID B
C14	LT GRN	.8	260	FUEL SOLENOID
C15	GRY	.5	435	ERG SOLENOID
C16	DK BLU/WHT	.8	259	FUEL SHUTOFF
D1				NOT USED
D2	WHT/BLK	.5	997	REFERENCE VOLTAGE TPS 1
D3	GRY	.5	397	3 MODE ELECTRONIC CRUISE CONTROL
D4				NOT USED
D5	PPL	.5	420	BRAKE SWITCH INPUT

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
D6				NOT USED
D7				NOT USED
D8	DK GRN/WHT	.5	389	EBS CONTROL SIGNAL
D9				NOT USED
D10				NOT USED
D11	GRY/BLK	.5	87	CRUISE CONTROL SWITCH-RETARD
D12				NOT USED
D13	LT GRN	.8	260	FUEL SOLENOID
D14				NOT USED
D15	DK BLU	.5	84	CRUISE CONTROL SWITCH-ENGAGE
D16				NOT USED

8A - 26 - 10 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS 6.5 DIESEL VIN S



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32 - WAY F MICRO - PACK 100 SERIES
PNK

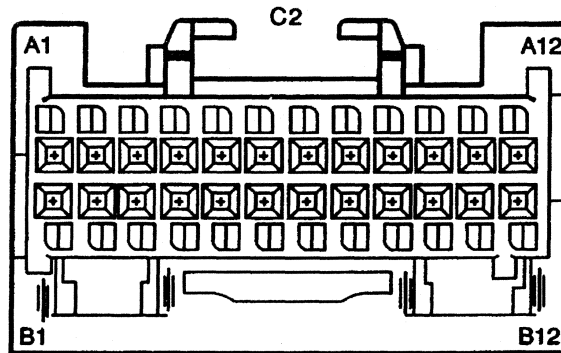
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CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1	BLK/WHT	.8	451	SYSTEM GROUND
C2	RED	.8	313	CLOSURE SIGNAL
C3	LT BLU	.5	993	TPS 2 SIGNAL
C4	PK BLU	.5	992	TPS 1 SIGNAL
C5	GRY/BLK	.8	433	BAROMETRIC PRESSURE SENSOR INPUT
C6	RED/BLK	.8	1228	TRANS FORCE MOTOR HIGH
C7	LT GRN	.5	432	MANIFOLD ABSOLUTE PRESSURE SENSOR INPUT
C8	YEL	.8	410	COOLANT TEMPERTURE
C9	YEL/BLK	.8	1227	TRANS TEMPERTURE INPUT
C10	GRY	.8	416	+5 VOLT REFERENCE
C11	LT BLU/WHT	.8	1229	TRANS FORCE MOTOR LOW
C12	RED/BLK	.8	1230	TRANS SPEED SENSOR INPUT
C13	YEL	.8	505	GLOW PLUG RELAY
C14	TAN	.5	800	SERIAL DATA
C15	BRN	.5	437	VEHICLE SPEED SENSOR INPUT
C16				NOT USED
D1	TAN/WHT	.8	551	ENGINE GROUND
D2	BLK	.8	491	CLOSURE GROUND
D3	PPL	.5	999	TPS 2 GROUND
D4	BRN	.5	998	TPS 1 GROUND
D5	GRY	.5	961	TPS 3 GROUND

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
D6	BLK	.8	452	TRANS TEMPERATURE/PRESSURE REFERENCE LOW
D7				NOT USED
D8				NOT USED
D9	ORN	.8	1799	TPS 2 SIGNAL
D10	GRY	.8	474	+5 VOLT REFERENCE
D11	YEL/BLK	.5	.995	REFERENCE VOLTAGE TPS 3
D12	DK BLU/WHT	.8	1231	TRANS SPEED SENSOR INPUT
D13	YEL	.8	643	CRANK SENSOR
D14	PNK/BLK	.8	632	CAM POSITION SENSOR GROUND
D15	BRN/WHT	.8	633	CAM POSITION SENSOR
D16				NOT USED

8A - 26 - 12 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS 6.5 DIESEL VIN S



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24 - WAY F MICRO - PACK 100 SERIES
PNK

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CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	PNK	.8	439	12V IGNITION (FUSED)
A2				NOT USED
A3	YEL	.8	258	EGR BOOST PWM SOLENOID CONTROL
A4	WHT	.8	257	EGR VENT SOLENOID
A5	YEL	.5	176	"SERVICE THROTTLE" SOON LAMP OUTPUT
A6				NOT USED
A7	WHT	.8	17	STOPLAMP INPUT
A8	RED/BLK	.8	1031	TIMING STEPPER A2
A9	TAN/BLK	.8	1030	TIMING STEPPER A1
A10	ORN/BLK	.8	1032	TIMING STEPPER B3
A11	YEL/BLK	.8	1033	TIMING STEPPER B4
A12	WHT/BLK	.5	448	DIAGNOSTIC ENABLE
B1				NOT USED
B2				NOT USED
B3				NOT USED
B4	DK GRN	.8	59	A/C ON INPUT
B5				NOT USED
B6				NOT USED
B7	TAN	.5	996	REFERENCE VOLTAGE TPS 2
B8	DK BLU	.5	507	GLOW PLUG "WAIT" LAMP OUTPUT
B9				NOT USED

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B10	DK GRN	.5	994	TPS 3 SIGNAL INPUT
B11	YEL	.8	1578	FUEL TEMPERTURE INPUT
B12	TAN	.8	472	INTAKE MANIFOLD AIR TEMPERTURE

COMPONENT **LOCATION** **201-PG FIG. CONN**

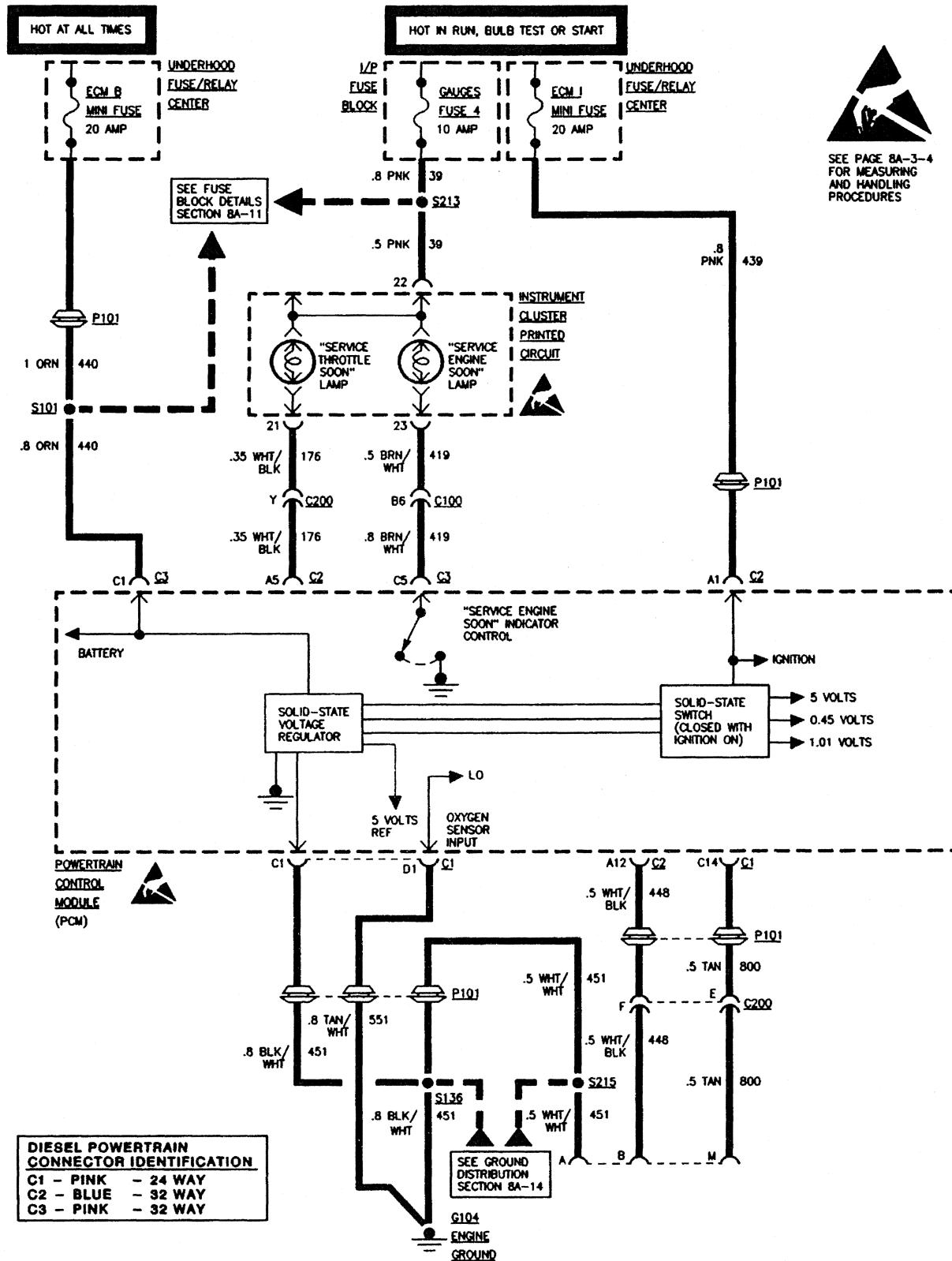
A/C Compressor.....	RH front of engine		
A/C High Pressure Cutout Switch (VIN F, S).....	On rear portion of A/C compressor		
Barometric Pressure Sensor (VIN P, F, S).....	Upper LH side of cowl, next to wiper motor		
Brake Pressure Modulator Valve (BPMV).....	Near brake master cylinder, at LH front wheelhouse	7.....	10
Coolant Temperature Sensor.....			
Crank Sensor	Inside electronic injection pump		
Cruise Control Switch.....	In turn signal lever		
Data Link Connector (DLC)	Under LH side of I/P.....	30.....	36
Electronic Accelerator Pedal Control Module (Diesel).....	Includes accelerator pedal		
Electronic Injection Pump	Top front of engine		
Electronic 4-speed Automatic Overdrive Transmission.....	Attached to rear of engine		
Exhaust Gas Recirculation (EGR)Boost Pulse Width Modulation Solenoid Valve, VIN S.....	LH rear top of engine, above valve cover		
Exhaust Gas Recirculation (EGR) Pulse Width Modulation Solenoid (VIN P, S).....	LH rear top of engine, above valve cover.....	13.....	16
Fuel Heater (Diesel).....	Top rear of engine.....	14.....	17
Fuel Lift Pump (Diesel)	Inside LH frame rail, below driver's door		
Fuel Pump Oil Pressure Switch And Sender (VIN P, F, S).....	LH rear of engine, at 2 o'clock position		
Fuel Pump Relay.....	In underhood fuse and relay center		
Glow Plug Control Module (VIN P, F, S)	LH rear of engine, near bulkhead.....	13.....	16
Instrument Cluster Printed Circuit.....	LH upper end of I/P		
Intake Manifold Air Temperature Sensor	At front of engine		
I/P Fuse Block.....	Lower LH side of I/P		

ENGINE CONTROLS 6.5 DIESEL VIN S

COMPONENT	LOCATION	201-PG	FIG.	CONN
Manifold Absolute Pressure (MAP) Sensor (Diesel).....	On bulkhead, RH of steering column			
Powertrain Control Module (PCM).....	Under RH end of I/P, above blower motor	29	.....	34
TCC/Stoplamp Switch	Top of brake pedal.....	34	.....	39
Transmission Input Speed Sensor.....	LH side of transmission			
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5	.....	8
Vehicle Speed Sensor Buffer.....	Under RH end of I/P.....	30	.....	35
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7	.....	10
C103.....	LH rear of engine compartment, under brake master cylinder			
C200.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28	.....	33
C204.....	Behind RH portion of I/P	31	.....	37
C266.....	LH side of steering column, near bulkhead.....	26	.....	31
GROUND:				
G104 (VIN F, S).....	RH top of cylinder head, near center.....	16	.....	19
G105 (VIN S)	RH top rear of cylinder head.....	15	.....	18
G200.....	Behind LH side of I/P, below fuse block			
GROMMETS:				
P100	LH rear of engine compartment at bulkhead.....	7	.....	10
P101	RH rear of engine compartment, at bulkhead			
SPLICES:				
S100 (VIN S).....	Engine harness, 5 cm from generator breakout			
S101 (VIN S).....	Engine harness, 10 cm from generator breakout			
S103 (VIN S).....	Engine harness, 3 cm from A/C high pressure switch breakout			
S105 (VIN S).....	Engine harness, 4 cm from A/C high pressure switch breakout			
S107 (VIN S).....	Engine harness, 5 cm from transmission harness breakout			
S108	Engine harness, approx. 32 cm from windshield washer motor breakout			
S110 (VIN S).....	Engine harness, 29 cm from C100			
S117 (VIN S)	Engine harness, 5 cm into forward lamps breakout			
S135 (VIN S).....	Engine harness, at glow plug controller			
S136. (VIN S).....	Engine harness, at glow plug controller			
S137 (VIN S).....	Engine harness, 23 cm from glow plug controller breakout			
S138 (VIN S).....	Engine harness, 7 cm into generator breakout			

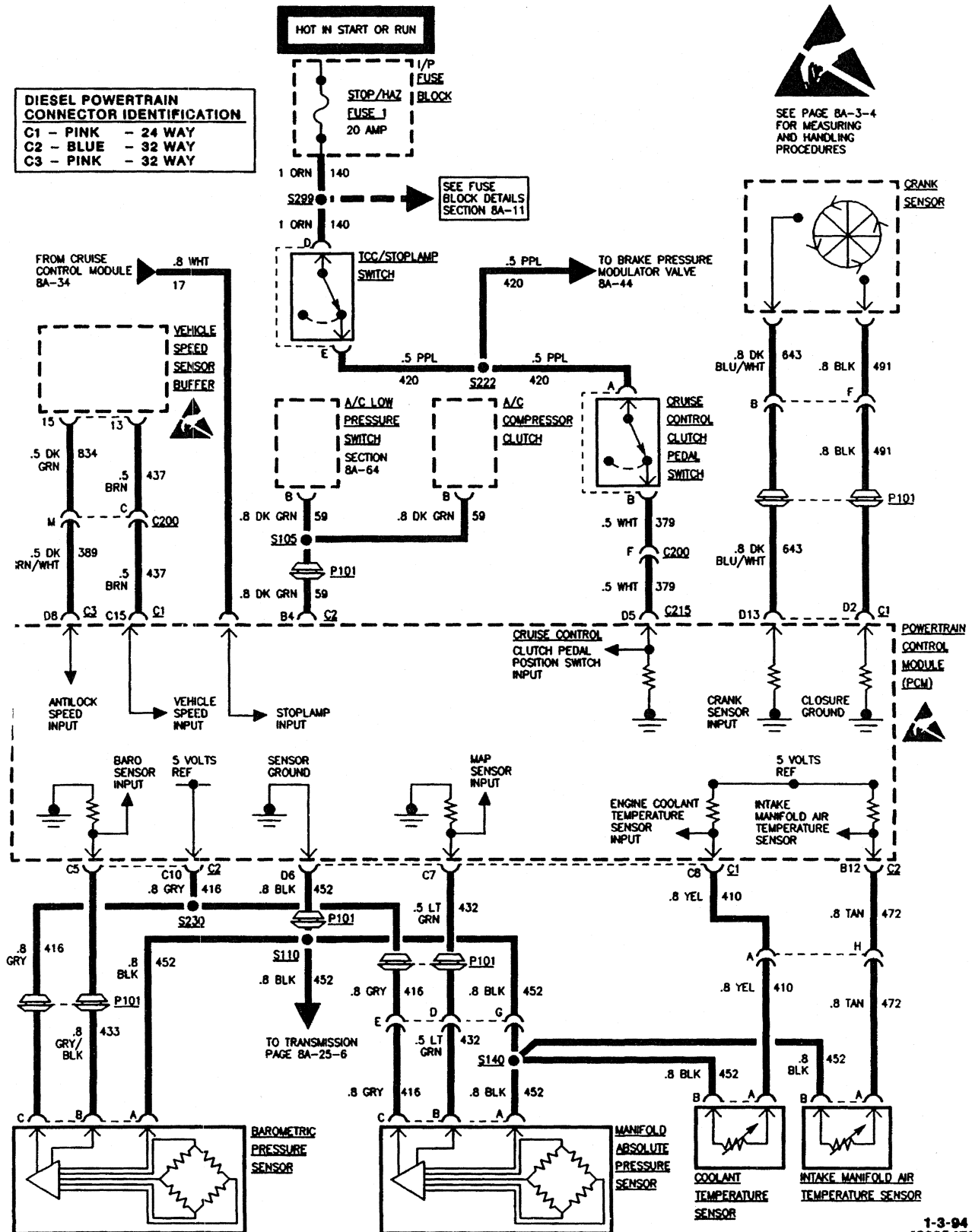
COMPONENT	LOCATION	201-PG FIG. CONN
S139 (VIN S)	Engine harness, 22 cm from C100	
S140 (VIN S)	Engine harness, 45 cm from underhood lamp breakout	
S204	I/P harness, approx. 4 cm left of steering column connector breakout	
S210	Approx. 15 cm from headlamp dimmer switch connector	
S213 (Diesel)	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout	
S215	I/P harness, approx. 8 cm right of I/P cluster breakout	
S218	I/P harness, approx. 4 cm right of turn signal flasher	
S229 (VIN S)	Engine harness, under RH side of I/P 18 cm from P101	
S230 (VIN S)	Engine harness, under RH side of I/P 32 cm from P101	
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout	

ENGINE CONTROLS 6.5L DIESEL VIN F

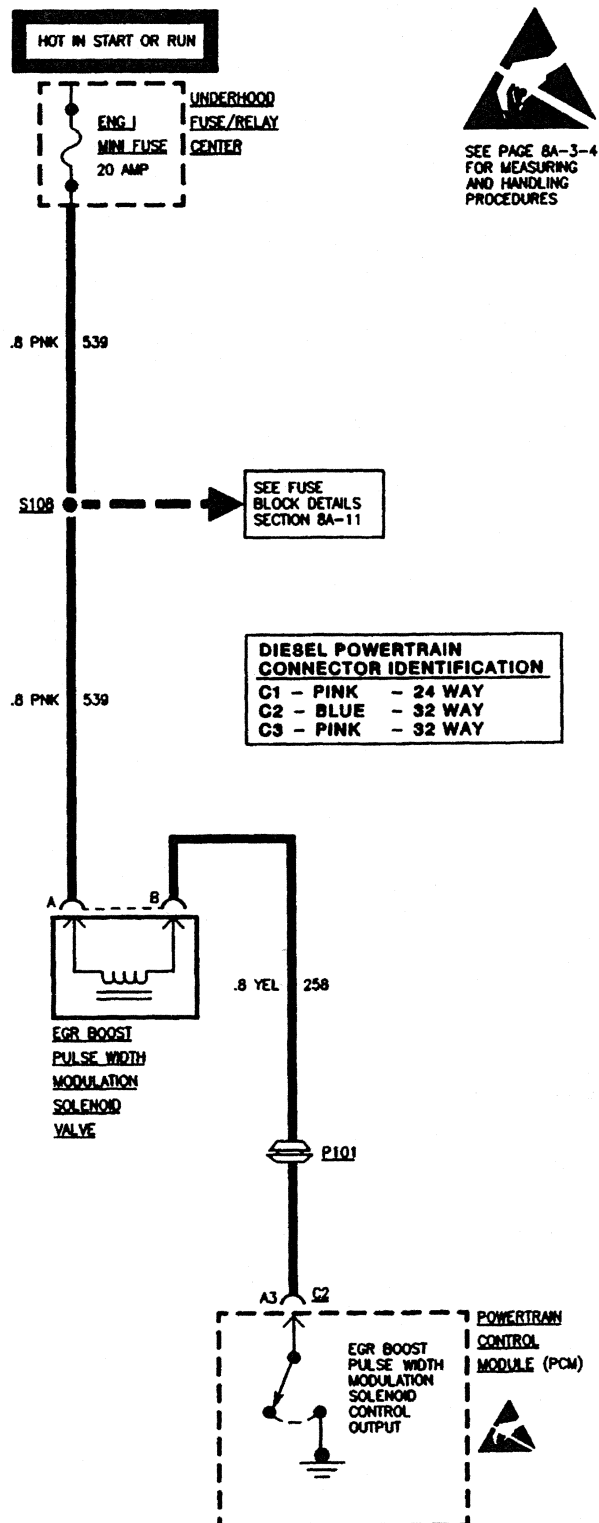


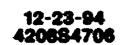
DIESEL POWERTRAIN CONNECTOR IDENTIFICATION

C1 - PINK - 24 WAY
C2 - BLUE - 32 WAY
C3 - PINK - 32 WAY

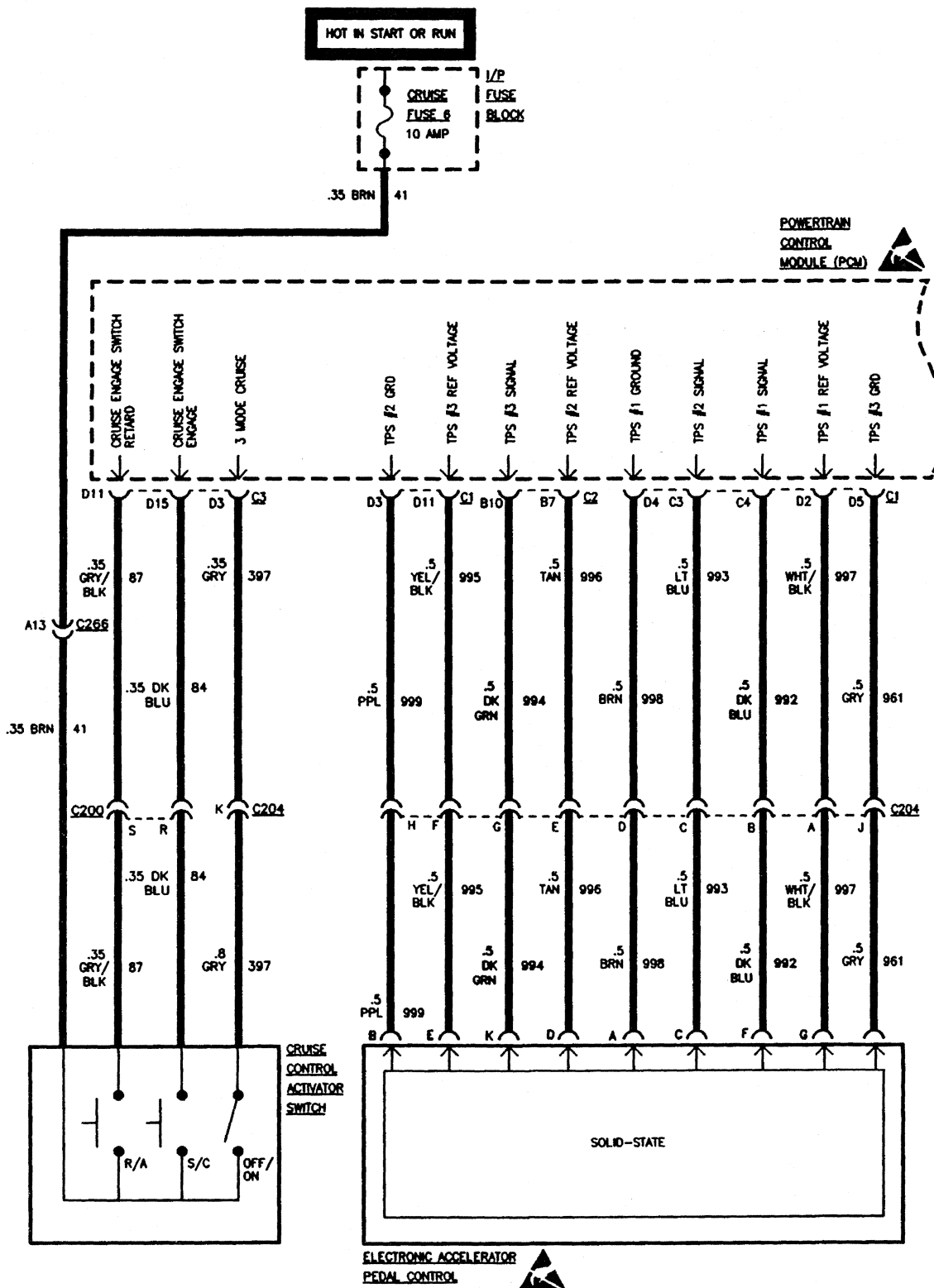


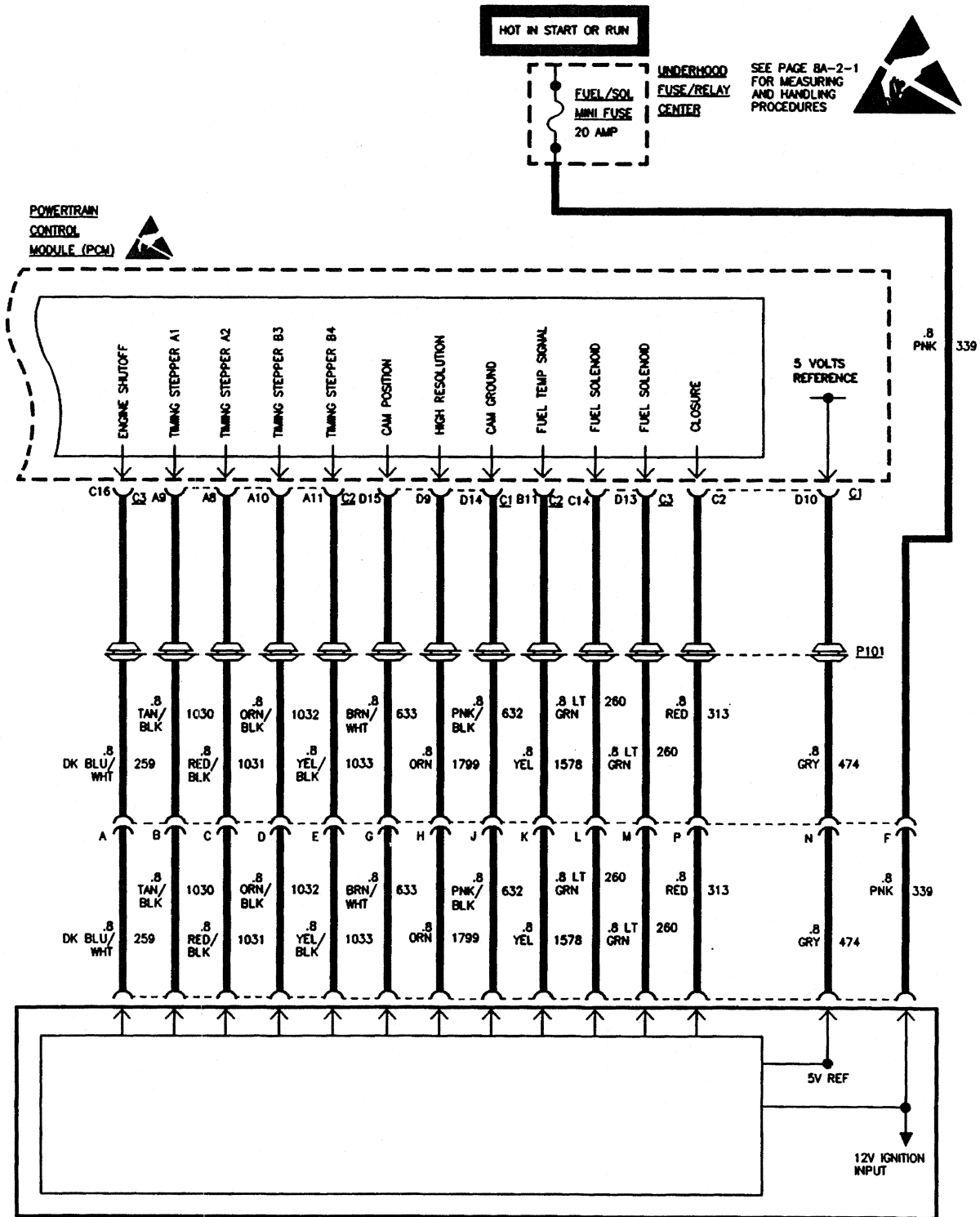
ENGINE CONTROLS 6.5L DIESEL VIN F





ENGINE CONTROLS 6.5L DIESEL VIN F





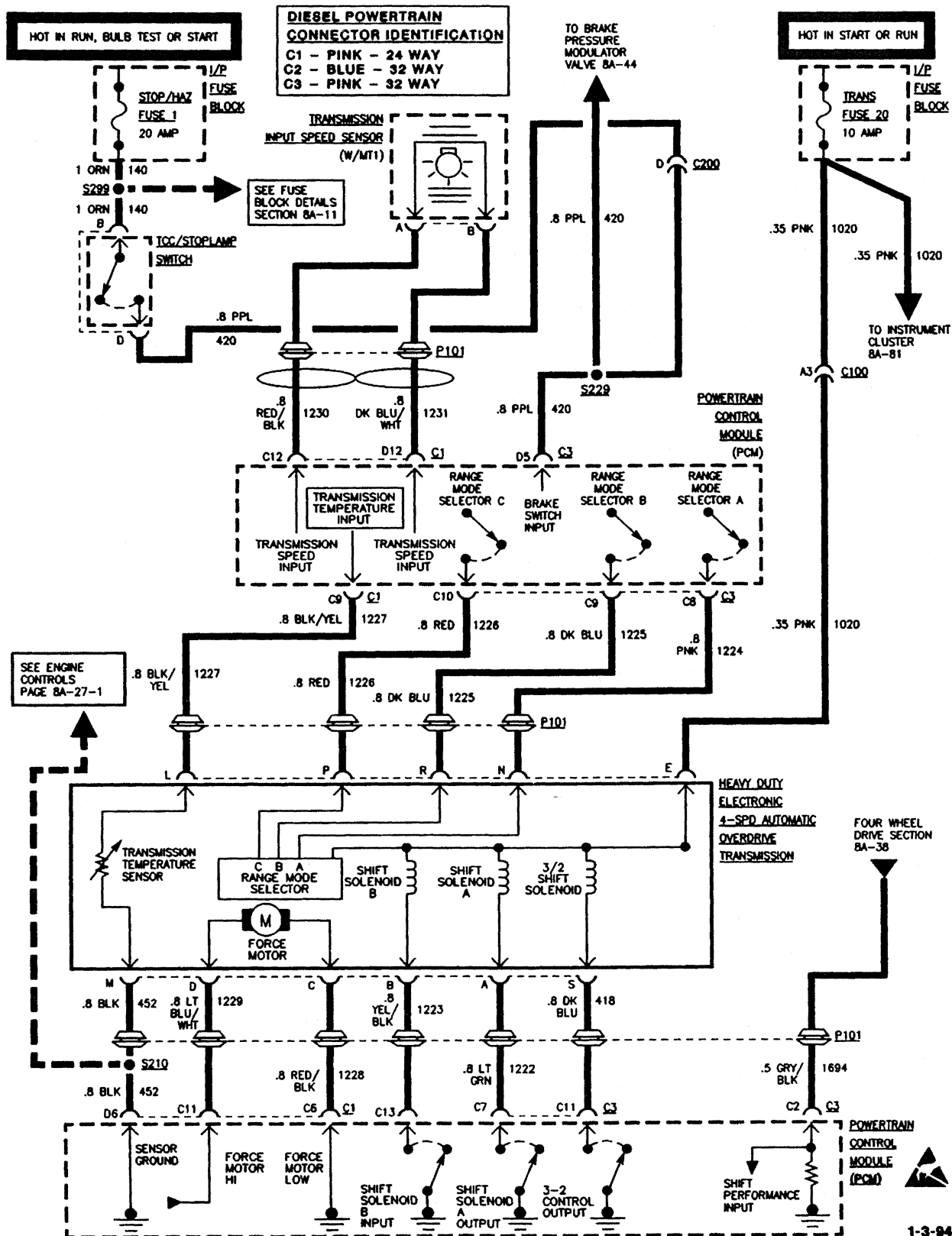
**ELECTRONIC
INJECTION PUMP**

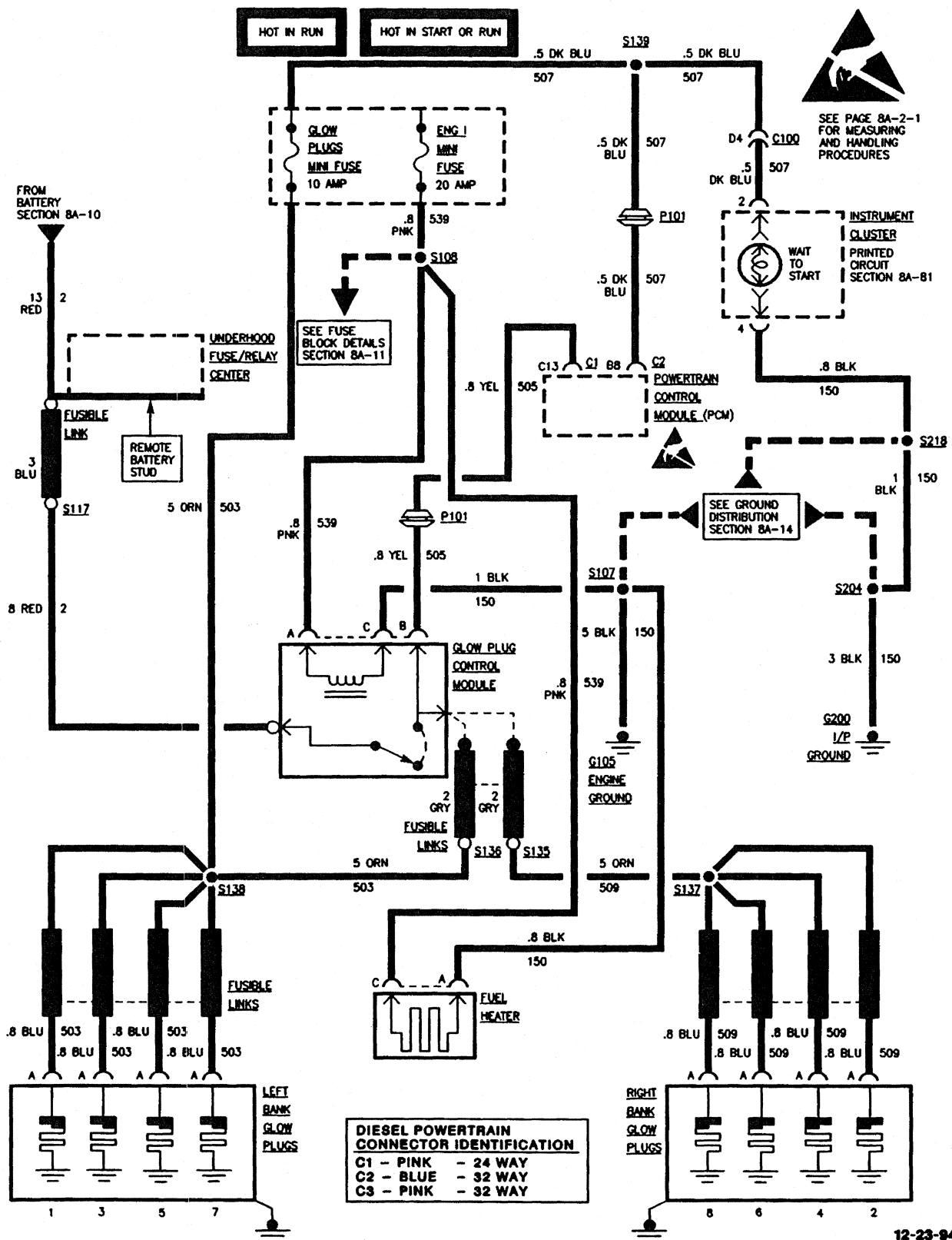
**DIESEL POWERTRAIN
CONNECTOR IDENTIFICATION**

C1 - PINK - 24 WAY
C2 - BLUE - 32 WAY
C3 - PINK - 32 WAY

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420834710

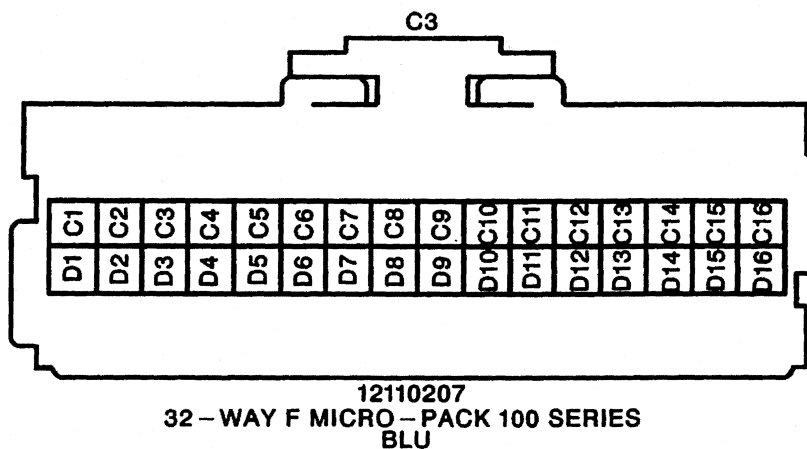
ENGINE CONTROLS 6.5L DIESEL VIN F





8A - 27 - 8 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS 6.5L DIESEL VIN F



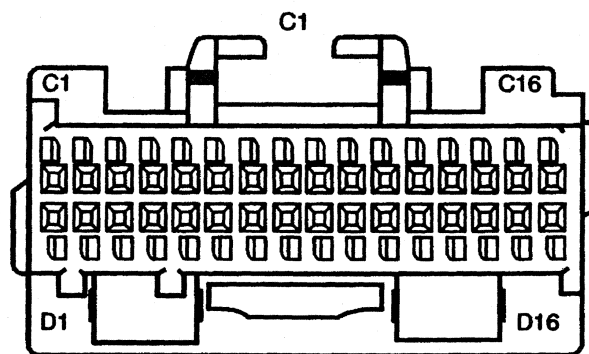
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CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1	ORN	.8	440	12V+BATTERY
C2	GRY/BLK	.5	1694	4WD INPUT
C3				NOT USED
C4				NOT USED
C5	BRN/WHT	.5	419	"SERVICE ENGINE SOON" LAMP OUTPUT
C6				NOT USED
C7	LT GRN	.8	1222	TRANS SHIFT SOLENOID A
C8	PNK	.8	1224	TRANS RANGE MODE A
C9	DK BLU	.8	1225	TRANS RANGE MODE B
C10	RED	.8	1226	TRANS RANGE MODE C
C11	BRN	.8	418	3/2 SHIFT CONTROL
C12				NOT USED
C13	YEL/BLK	.8	1223	TRANS SHIFT SOLENOID B
C14	LT GRN	.8	260	FUEL SOLENOID
C15				NOT USED
C16	DK BLU/WHT	.8	259	FUEL SHUTOFF
D1				NOT USED
D2	WHT/BLK	.5	997	REFERENCE VOLTAGE TPS 1
D3	GRY	.5	397	3 MODE ELECTRONIC CRUISE CONTROL
D4				NOT USED
D5	PPL	.5	420	BRAKE SWITCH INPUT

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
D6				NOT USED
D7				NOT USED
D8	DK GRN/WHT	.5	389	EBS CONTROL SIGNAL
D9				NOT USED
D10				NOT USED
D11	GRY/BLK	.5	87	CRUISE CONTROL SWITCH-RETARD
D12				NOT USED
D13	LT GRN	.8	260	FUEL SOLENOID
D14				NOT USED
D15	DK BLU	.5	84	CRUISE CONTROL SWITCH-ENGAGE
D16				NOT USED

8A - 27 - 10 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS 6.5L DIESEL VIN F



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32 - WAY F MICRO - PACK 100 SERIES
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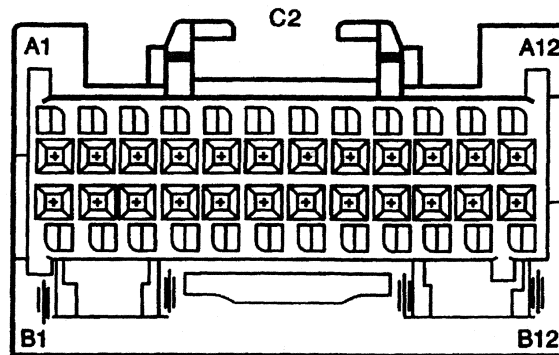
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CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1	BLK/WHT	.8	451	SYSTEM GROUND
C2	RED	.8	313	CLOSURE SIGNAL
C3	LT BLU	.5	993	TPS 2 SIGNAL
C4	DK BLU	.5	992	TPS 1 SIGNAL
C5	GRY/BLK	.8	433	BAROMETRIC PRESSURE SENSOR INPUT
C6	RED/BLK	.8	1228	TRANS FORCE MOTOR HIGH
C7	LT GRN	.5	432	MANIFOLD ABSOLUTE PRESSURE SENSOR INPUT
C8	YEL	.8	410	COOLANT TEMPERTURE
C9	YEL/BLK	.8	1227	TRANS TEMPERTURE INPUT
C10	GRY	.8	416	+5 VOLT REFERENCE
C11	LT BLU/WHT	.8	1229	TRANS FORCE MOTOR LOW
C12	RED/BLK	.8	1230	TRANS SPEED SENSOR INPUT
C13	YEL	.8	505	GLOW PLUG RELAY
C14	TAN	.5	800	SERIAL DATA
C15	BRN	.5	437	VEHICLE SPEED SENSOR INPUT
C16				NOT USED
D1	TAN/WHT	.8	551	ENGINE GROUND
D2	BLK	.8	491	CLOSURE GROUND
D3	PPL	.5	999	TPS 2 GROUND
D4	BRN	.5	998	TPS 1 GROUND
D5	GRY	.5	961	TPS 3 GROUND

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
D6	BLK	.8	452	TRANS TEMPATURE/PRESSURE REFERENCE LOW
D7				NOT USED
D8				NOT USED
D9	ORN	.8	1799	TPS 2 SIGNAL
D10	GRY	.8	474	+5 VOLT REFERENCE
D11	YEL/BLK	.5	995	REFERENCE VOLTAGE TPS 3
D12	DK BLU/WHT	.8	1231	TRANS SPEED SENSOR INPUT
D13	YEL	.8	643	CRANK SENSOR
D14	PNK/BLK	.8	632	CAM POSITION SENSOR GROUND
D15	BRN/WHT	.8	633	CAM POSITION SENSOR
D16				NOT USED

8A - 27 - 12 ELECTRICAL DIAGNOSIS

ENGINE CONTROLS 6.5L DIESEL VIN F



12110244
24 - WAY F MICRO - PACK 100 SERIES
PNK

4508S3387

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	PNK	.8	439	12V IGNITION (FUSED)
A2				NOT USED
A3	YEL	.8	258	EGR BOOST PWN SOLENOID CONTROL
A4				NOT USED
A5	YEL	.5	960	"SERVICE THROTTLE" SOON LAMP OUTPUT
A6				NOT USED
A7	WHT	.8	17	STOPLAMP INPUT
A8	RED/BLK	.8	1031	TIMING STEPPER A2
A9	TAN/BLK	.8	1030	TIMING STEPPER A1
A10	ORN/BLK	.8	1032	TIMING STEPPER B3
A11	YEL/BLK	.8	1033	TIMING STEPPER B4
A12	WHT/BLK	.5	448	DIAGNOSTIC ENABLE
B1				NOT USED
B2				NOT USED
B3				NOT USED
B4	DK GRN	.8	59	A/C ON INPUT
B5				NOT USED
B6				NOT USED
B7	TAN	.5	996	REFERENCE VOLTAGE TPS 2
B8	DK BLU	.5	507	GLOW PLUG "WAIT" LAMP OUTPUT
B9				NOT USED

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B10	YEL	.5	994	TPS 3 SIGNAL INPUT
B11	YEL	.8	1578	FUEL TEMPERTURE INPUT
B12	TAN	.8	472	INTAKE MANIFOLD AIR TEMPERTURE

COMPONENT LOCATION 201-PG FIG. CONN

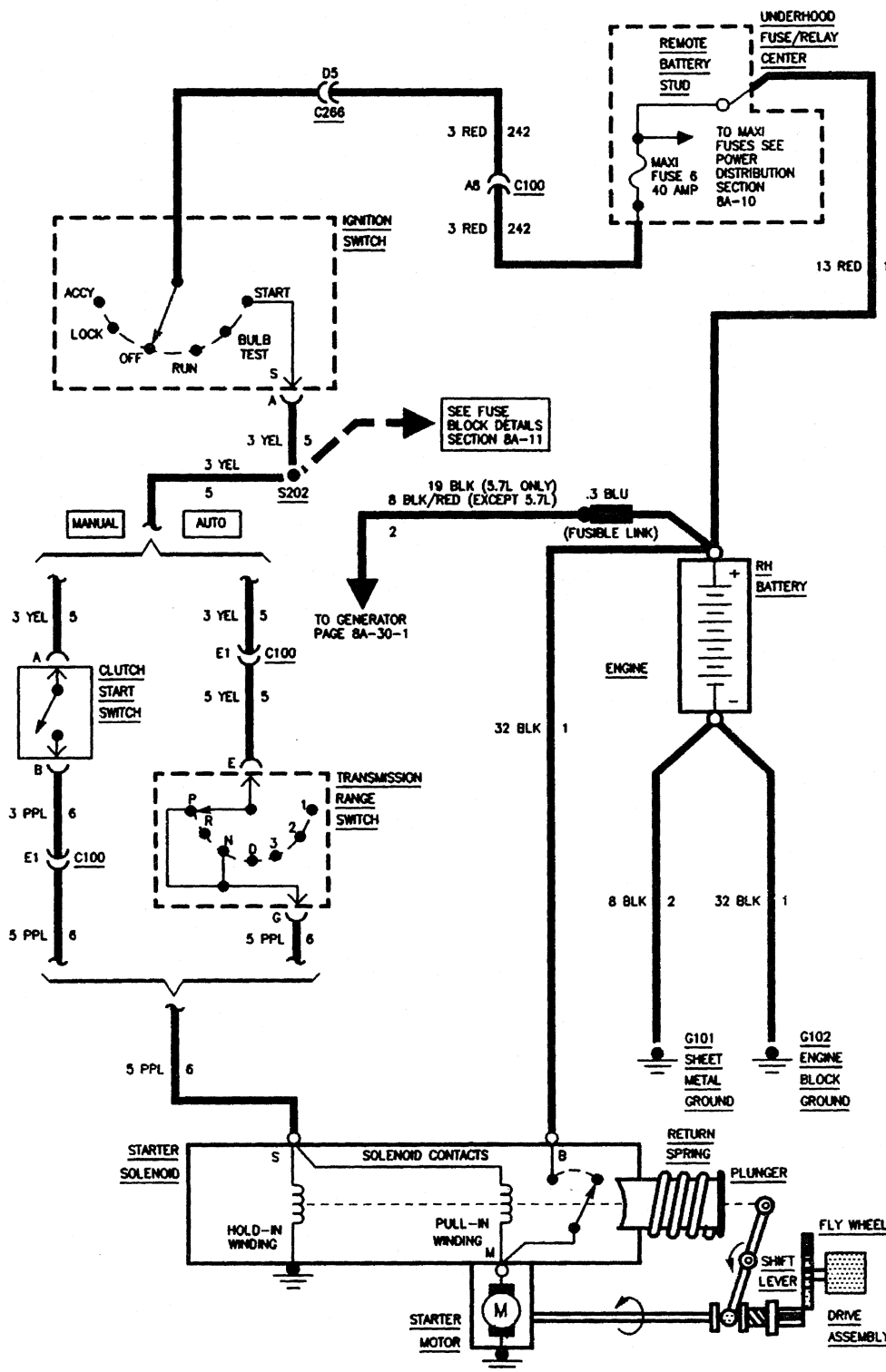
A/C Compressor Clutch.....	Front of A/C compressor		
A/C Low Pressure Cutout Switch (VIN P, F, S).....	At A/C accumulator, RH rear of engine compartment		
Barometric (BARO) Pressure Sensor (VIN P, F, S).....	Upper LH side of cowl, next to wiper motor		
Crank Sensor	Inside electronic injection pump		
Cruise Control Activator Switch.....	In turn signal lever		
Cruise Control Clutch Pedal Position Switch	Under I/P, left of steering column on clutch pedal support bracket	26	31
Data Link Connector (DLC)	Under LH side of I/P.....	30	36
Electronic Accelerator Control Module (Diesel)	Includes accelerator pedal		
Electronic Injection Pump	Top front of engine		
Engine Coolant Temperature Sensor (VIN P, F, S).....	LH lower front of engine block		
Exhaust Gas Recirculation (EGR)Boost Pulse Width Modulation Solenoid Valve, VIN S	LH rear top of engine, above valve cover		
Fuel Heater (Diesel).....	Top rear of engine.....	14	17
Fuel Lift Pump (Diesel)	Inside LH frame rail, below driver's door		
Fuel Pump Oil Pressure Switch And Sender (VIN P, F, S)	LH rear of engine, at 2 o'clock position		
Fuel Pump Relay.....	In underhood fuse and relay center		
Glow Plug Control Module (VIN P, F, S)	LH rear of engine, near bulkhead.....	13	16
Heavy Duty Electronic 4-Speed Automatic Overdrive Transmission.....	Attached to rear of engine		
Instrument Cluster Printed Circuit.....	LH upper end of I/P		
Intake Manifold Air Temperature Sensor	At front of engine		
I/P Fuse Block.....	Lower LH side of I/P		

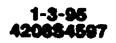
ENGINE CONTROLS 6.5L DIESEL VIN F

COMPONENT	LOCATION	201-PG	FIG.	CONN
Manifold Absolute Pressure (MAP) Sensor	Rear top center of engine.....	12.....	15	
Powertrain Control Module (PCM).....	Under RH end of I/P, above blower motor	29.....	34	
TCC/Stoplamp Switch	Top of brake pedal.....	34.....	39	
Transmission Input Speed Sensor	LH side of transmission			
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5.....	8	
Vehicle Speed Sensor Buffer.....	Under RH end of I/P	30.....	35	
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7.....	10	
C103.....	LH rear of engine compartment, under brake master cylinder			
C200.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28.....	33	
C204.....	Behind RH portion of I/P	31.....	37	
C266.....	LH side of steering column, near bulkhead.....	26.....	31	
GROUND:				
G104 (VIN F, S).....	RH top of cylinder head, near center.....	16.....	19	
G200.....	Behind LH side of I/P, below fuse block			
GROMMETS:				
P100	LH rear of engine compartment at bulkhead.....	7.....	10	
P101	RH rear of engine compartment, at bulkhead			
SPLICES:				
S100	Engine Harness, 5 cm from generator breakout			
S101 (VIN F).....	Engine harness, 10 cm from generator breakout			
S103 (VIN F).....	Engine harness, 10 cm from A/C high pressure switch breakout			
S105 (VIN F).....	Engine harness, 4 cm from A/C high pressure switch breakout			
S107. (VIN F).....	Engine harness, 5 cm from transmission harness breakout			
S108. (VIN F).....	Engine harness, 5 cm from generator breakout			
S117	Engine harness, 5 cm into forward lamps breakout			
S135 (VIN F).....	Engine harness, at glow plug controller			
S136 (VIN F).....	Engine harness, at glow plug controller			
S137. (VIN F).....	Engine harness, 23 cm from glow plug controller breakout			
S138. (VIN F).....	Engine harness, 7 cm into generator breakout			
S139 (VIN F).....	Engine harness, 22 cm from C100			
S140. (VIN F).....	Engine harness, 45 cm from underhood lamp breakout			

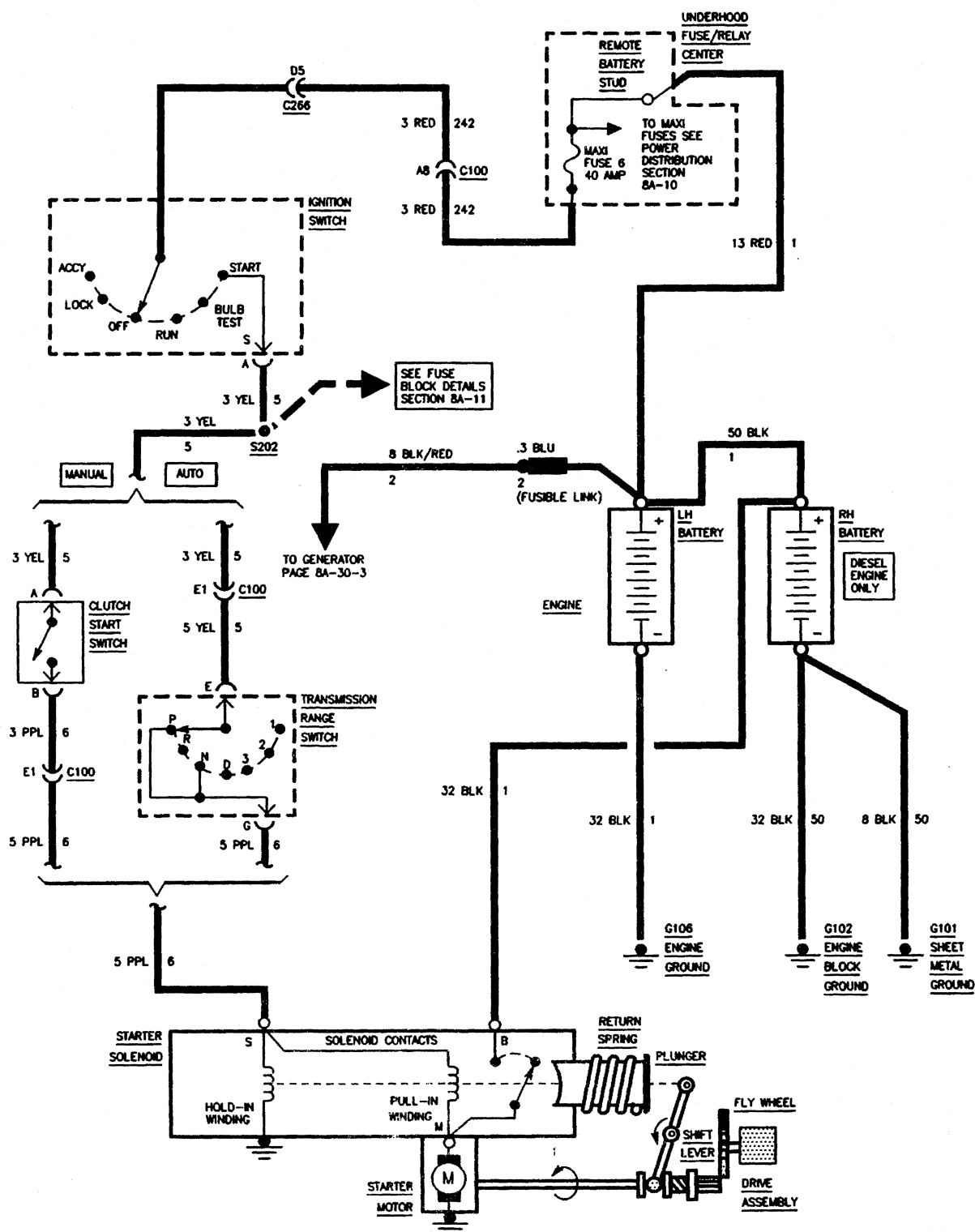
COMPONENT	LOCATION	201-PG FIG. CONN
S204	I/P harness, approx. 4 cm left of steering column connector breakout	
S210	Approx. 15 cm from headlamp dimmer switch connector	
S213 (Crew Cab, VIN F).....	I/P harness approx. 16 cm right of breakout for LH door jamb switch	
S215	I/P harness, approx. 8 cm right of I/P cluster breakout	
S218	I/P harness, approx. 4 cm right of turn signal flasher	
S222	I/P harness, approx. 11 cm left of cruise control harness breakout	
S230. (VIN F)	Engine harness, under RH side of I/P 32 cm from P101	
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout	

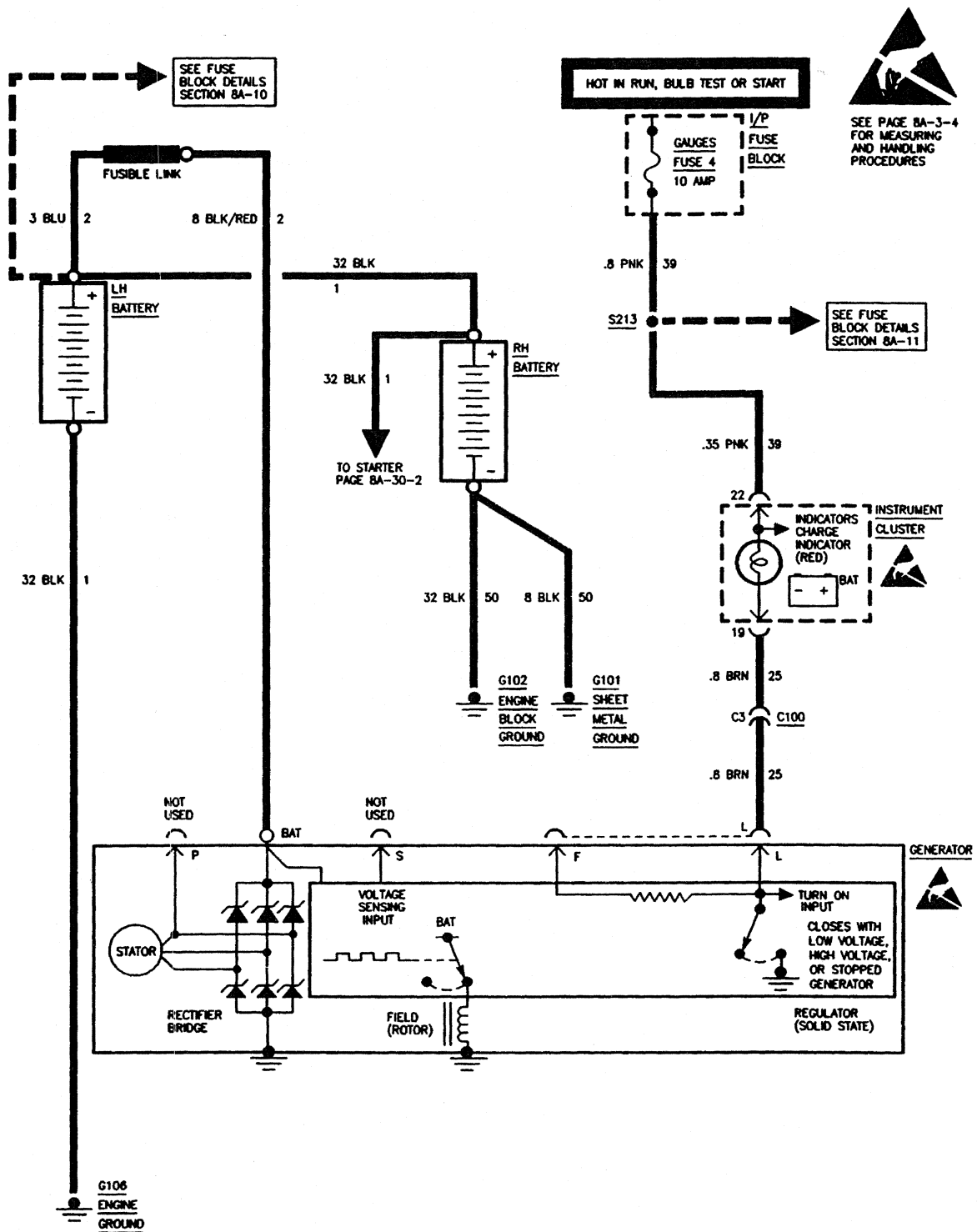
STARTER AND CHARGING GASOLINE ENGINES





STARTER AND CHARGING DIESEL ENGINES





STARTER AND CHARGING

COMPONENT	LOCATION	201-PG	FIG.	CONN
Battery.....	RH front of engine compartment.....	1	3	
Battery, LH, Diesel	LH front of engine compartment.....	1	4	
Battery, RH, Diesel.....	RH front of engine compartment.....	1	4	
Clutch Start Switch.....	At top of clutch pedal			
Generator.....	LH front of engine.....	1	3	
I/P Fuse Block	Lower LH side of I/P			
Ignition Switch.....	Under I/P, on steering column			
Instrument Cluster.....	LH upper end of I/P			
Starter Motor	RH lower rear side of engine	1	3	
Starter Solenoid (VIN H, K)....	Lower RH side of engine, on starter motor			
Starter Solenoid (VIN N).....	Lower RH side of engine, on starter motor			
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7	10	
C266.....	LH side of steering column, near bulkhead.....	26.....	31	
GROUND:				
G101.....	Sheet metal at RH front wheelhouse.....	2	5	
G102 (VIN N).....	RH front of engine block, near damper pulley	2	5	
G102 (VIN Z, H, K).....	LH front of intake manifold.....	2	5	
SPLICES:				
S202	I/P harness, approx. 27 cm from TCC stop lamp switch connector			
S213	I/P harness, approx 16 cm right of fuse block breakout			

DIAGNOSIS—STARTER AND CHARGING

TROUBLESHOOTING HINTS:

(Perform before beginning System Diagnosis)

STARTER

1. Visually inspect the hydrometer (built into Battery).
 - Green eye—Battery is charged.
 - Dark eye—Charge and load test Battery, refer to SECTION 6. If Battery passes load test, refer to System Diagnosis, SECTION 8A-30.
 - Clear or light yellow eye—Battery electrolyte is low. Replace Battery.
2. Check that Starter Solenoid terminals "S" and "B" and Battery connections are clean and tight.
3. Check the condition of MAXI FUSE 6. If fuse is open, LOCATE and REPAIR source of overload and REPLACE fuse.
4. Check that grounds G101 and G102 (gasoline engines) or grounds G101, G102 and G106 (diesel engines) are clean and tight.
 - Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
 - Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

CHARGING SYSTEM

1. Visually inspect the hydrometer (built into Battery).
 - Green eye—Battery is charged.
 - Dark eye—Charge and load test Battery, refer to Section 6. If Battery passes load test, refer to System Diagnosis, SECTION 8A-30.
 - Clear or light yellow eye—Battery electrolyte is low. Replace Battery.

2. Check Gauges Fuse 4 for open.
3. Check that the Generator connector and Generator "BAT" terminal are both clean and tight.
4. Check that the Battery connections are clean and tight.
5. Check Generator belt.
6. Check Fusible Link G for an open.
7. Check that grounds G101 and G102 are clean and tight.
 - Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
 - Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

SYSTEM DIAGNOSIS

- The following tests are designed for engines and batteries at normal operating temperatures and assumes that there are no engine symptoms which would cause a no-start symptom. The Battery must be in a charged state before doing diagnosis. To use the tests under other conditions could result in misdiagnosis.
- Perform the On-Board Diagnostic System Check described in SECTION 3A or 3B to be certain that no Diagnostic Trouble Codes (DTCs) are stored in PCM memory which may lead to misdiagnosis.

STARTER AND CHARGING**STARTER SOLENOID CLICKS, ENGINE DOES NOT CRANK OR CRANKS SLOWLY**

TEST	RESULT	ACTION
1. Connect voltmeter to positive and negative battery terminals. Place Ignition Switch in START.	Voltage reading greater than 9.5 volts after 15 seconds cranking.	GO to step 2.
	Voltage less than 9.5 volts after 15 seconds cranking.	PERFORM a Battery Load Test. Refer to Section 6D. If Battery passes load test, REPAIR Starter Motor.
2. Connect voltmeter from negative battery terminal to engine block.	Less than 0.5 volts.	GO to step 3.
	More than 0.5 volts.	REPLACE Negative Battery Cable.
3. Connect voltmeter from positive battery terminal to Starter Solenoid terminal at BLK (1) wire.	Less than 0.5 volts.	REPAIR Starter Motor.
	More than 0.5 volts.	REPLACE Positive Battery Cable.

ENGINE DOES NOT CRANK AND STARTER SOLENOID DOES NOT CLICK

TEST	RESULT	ACTION
1. Place Transmission in PARK (auto) or depress Clutch Pedal (Man). Connect voltmeter from PPL (6) wire at Starter Solenoid to ground. Place Ignition Switch in START position.	Battery voltage.	GO to step 2.
	No voltage.	GO to step 3 for Man Trans. GO to step 5 for Auto Trans.
2. Connect voltmeter from PPL (6) wire to Starter mounting bolts. Place Ignition Switch in START position.	Battery voltage.	REPLACE Starter Solenoid.
	Less than battery voltage.	CLEAN Starter Motor mounting bolts, Starter Motor and mounting surface.
3. Disconnect Clutch Start Switch Connector. Connect voltmeter from YEL (5) wire at Clutch Start Switch Connector to ground. Ignition Switch must be in START position.	Battery voltage.	GO to step 4.
	No voltage.	GO to step 7.
4. Depress Clutch and put Transmission in NEUTRAL. Apply Parking Brake. Connect fused jumper from YEL (5) to PPL (6) at Clutch Start Switch Connector. Place Ignition Switch in START position.	Engine cranks.	ADJUST Clutch Start Switch. If Start Switch cannot be adjusted, REPLACE Clutch Start Switch.
	Engine does not crank.	LOCATE and REPAIR open in PPL (6) wire from Clutch Start Switch Connector to Starter Solenoid.
5. Disconnect Transmission Range Switch connector C1. Connect voltmeter from YEL (5) wire at Transmission Range Switch Connector to ground. Place Ignition Switch in START position.	Battery voltage.	GO to step 6.
	No voltage.	GO to step 7.
6. Connect a fused jumper from Transmission Range Switch Connector YEL (5) wire to PPL (6) wire. Place Ignition Switch in START position.	Engine cranks.	REPLACE Transmission Range Switch.
	Engine does not crank.	LOCATE and REPAIR open in Transmission Range Switch (6) wire from Transmission Range Switch to Starter Solenoid.

TEST	RESULT	ACTION
7. Connect a voltmeter from Ignition Switch YEL (5) wire to ground. Place Ignition Switch in START position.	Battery voltage.	LOCATE and REPAIR open in YEL (5) wire from Ignition Switch to Clutch Start Switch (Man.) or Transmission Range Switch (Auto.).
	No voltage.	GO to step 8.
8. Connect a voltmeter from Ignition Switch RED (242) wire to ground.	Battery voltage.	REPLACE Ignition Switch.
	No voltage.	LOCATE and REPAIR open in RED (242) wire between Ignition Switch and Underhood Fuse/Relay Center.

CHARGE INDICATOR DOES NOT LIGHT WITH IGNITION SWITCH IN RUN AND ENGINE STOPPED

TEST	RESULT	ACTION
1. Disconnect Generator Connector. Place Ignition Switch in RUN position. Connect fused jumper from BRN (25) wire at Generator Connector to ground.	Charge Indicator lights.	REPAIR Generator.
	Charge Indicator does not light.	GO to step 2.
2. Backprobe BRN (25) wire at I/P Cluster with a fused jumper to ground.	Charge Indicator lights.	LOCATE and REPAIR open in BRN (25) wire between I/P Cluster and Generator.
	Charge Indicator does not light.	GO to step 3.
3. Disconnect I/P Cluster Connector. Connect a voltmeter from PNK (39) terminal "22" at I/P Cluster Connector to ground.	Battery voltage.	Check Charge Indicator lamp for an open filament. If OK, REPLACE I/P Cluster.
	No voltage.	LOCATE and REPAIR open in PNK (39) wire from I/P Fuse Block to I/P Cluster.

CHARGE INDICATOR STAYS ON WHEN ENGINE IS RUNNING

TEST	RESULT	ACTION
1. Shut engine off. 2. Disconnect Generator connector. 3. Place Ignition Switch in RUN position.	Charge Indicator does not light.	REPAIR Generator.
	Charge Indicator remains lit.	LOCATE and REPAIR short to ground in BRN (25) wire from Generator Connector to I/P Cluster Connector. If short cannot be located in BRN (25) wire, then REPLACE I/P Cluster.

BATTERY IS UNDERCHARGED OR OVERCHARGED

TEST	RESULT	ACTION
1. Disconnect Generator Connector. Place Ignition Switch in RUN position. Connect voltmeter from BRN (25) wire at Generator Connector to ground.	Battery voltage.	GO to step 2.
	No voltage.	GO to step 4.
2. Connect voltmeter from terminal (BAT) at Generator to ground.	Battery voltage.	GO to step 3.
	No voltage.	REPAIR/REPLACE BLK/RED (2) wire from Fusible Link to Generator.

STARTER AND CHARGING

TEST	RESULT	ACTION
3. Connect Generator Connector. Have all accessories turned off and engine running at fast idle. Connect voltmeter across battery terminals and note voltage.	Reading of 13-16 volts.	PERFORM Battery Load Test. Refer to SECTION 6.
	Reading of less than or greater than 13-16 volts.	PERFORM Generator Bench Test. Refer to Section 6. If Generator is okay, PERFORM Battery Load Test. Refer to SECTION 6.
4. Backprobe BRN (25) wire at I/P Cluster Connector with a voltmeter to ground.	Battery voltage.	LOCATE and REPAIR open in BRN (25) wire from I/P Cluster to Generator.
	No voltage.	GO to step 5.
5. Backprobe PNK (39) wire at I/P Cluster Connector terminal "22" with a voltmeter to ground.	Battery voltage.	CHECK charge indicator filament. If OK, REPLACE I/P Cluster.
	No voltage.	LOCATE and REPAIR open in PNK (39) wire from I/P Fuse Block to I/P Cluster.

CIRCUIT OPERATION

STARTER

When the Ignition Switch is moved to the START position, battery voltage is applied to the Starter Solenoid through the PPL (6) wire. On manual transmission vehicles, the clutch pedal must be depressed. On automatic transmission vehicles, the Transmission Range Switch must be in the PARK or NEUTRAL position. Both solenoid windings are energized. The circuit through the Pull-In Winding is completed to ground through the Starter Motor. The windings work together magnetically to pull in and hold in the Plunger. The Plunger moves the Shift Lever. This action causes the Starter Drive Assembly to rotate as it engages the Flywheel ring gear on the engine. At the same time, the Plunger also closes the solenoid switch contacts in the Starter Solenoid. Full battery voltage is supplied directly to the Starter Motor and it cranks the engine.

As soon as the Solenoid Switch contacts close, voltage is no longer supplied through the Pull-In Windings, since battery voltage is supplied to both ends of the windings. The Hold-In Winding remains energized, and its magnetic field is strong enough to hold the Plunger, Shift Lever and Drive Assembly Solenoid Switch contacts in place to continue cranking the engine.

When the Ignition Switch is released from the START position, battery voltage is removed from the PPL (6) wire and the junction of the two windings. Voltage is supplied from the Motor contacts through both windings to ground at the end of the Hold-In Windings. However, the voltage supplied to the Pull-In Winding is now opposing the voltage supplied when the winding was first energized. The magnetic fields of the Pull-In and Hold-In Windings now oppose one another. This action of the windings, with the help of the Return Spring, causes the Starter Drive

Assembly to disengage and Solenoid Switch contacts to open simultaneously. As soon as the contacts open, the starter circuit is turned off.

CHARGING

The Generator provides voltage to operate the vehicle's electrical system and to charge its Battery. A magnetic field is created when current flows through the Rotor. This field rotates as the Rotor is driven by the engine, creating an AC voltage in the Stator windings. The AC voltage is converted to DC by the rectifier bridge and is supplied to the electrical system at the Battery terminal.

This Generator's regulator uses digital techniques to supply the Rotor current and thereby controlling the output voltage. The Rotor current is proportional to the width of the electrical pulses supplied to it by the Regulator. When the Ignition Switch is placed in RUN, narrow width pulses are supplied to the Rotor, creating a weak magnetic field. When the engine is started, the Regulator senses Generator rotation by detecting AC voltage at the Stator through an internal wire. Once the engine is running, the Regulator varies the field current by controlling the pulse width. This regulates the Generator output voltage for proper battery charging and electrical system operation.

The digital regulator controls the VOLTS Indicator lamp with a solid-state lamp driver. The lamp driver turns on the lamp whenever undervoltage, overvoltage or a stopped Generator is detected.

BLANK



COMPONENT	LOCATION	201-PG	FIG.	CONN
A/C Controller (Connector C2).	Center of I/P			
A/C High Pressure Cutout Switch (VIN F, S)	On rear portion of A/C compressor			
A/C High Pressure Cutout Switch (VIN P)	On rear portion of A/C compressor			
Auxiliary Cooling Fan Motor ...	In front of radiator	0		2
Auxiliary Cooling Fan Relay	LH rear side of engine compartment			
Auxiliary Cooling Fan Temperature Switch (VIN H, K)	RH cylinder head, above starter solenoid	10		13
Auxiliary Cooling Fan Temperature Switch (VIN N)	RH cylinder head, above starter solenoid	12		15
Underhood Fuse/Relay Center...	LH rear of engine compartment, on fender	5		8
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7		10
C101	LH rear of engine compartment near fuse relay center	4		7
DIODE:				
D100 (VIN K w/5D5)	Engine harness, approx. 32 cm from auxiliary cooling fan temperature switch			
D100 (VIN N)	Engine harness, approx. 25 cm from auxiliary cooling fan temperature switch			
D101	Engine harness, approx. 12 cm from C101 breakout			
D101 (VIN K w/manual)	In underhood fuse relay center breakout, approx. 8 cm from engine harness			
D101 (VIN N)	In underhood fuse relay center breakout, approx. 8 cm from engine harness			
GROUND:				
G112	RH front of engine compartment, below underhood reel lamp			
G113	On radiator support, near LH headlamp			
SPLICES:				
S114	Engine harness, approx. 4 cm from C101 breakout			
S114 (VIN N)	In underhood fuse relay center breakout, approx. 16 cm from engine harness			
S123	Forward lamps harness, 5 cm right of LH horn breakout			
S128	Forward lamps harness, 5 cm right of RH headlamp breakout			
129	Engine harness, approx. 25 cm from auxiliary cooling fan switch connector breakout			
S129 (VIN H, K w/5D5)	Engine harness, approx. 32 cm from auxiliary cooling fan temperature switch			

COOLING FAN

COMPONENT	LOCATION	201-PG FIG. CONN
S129 (VIN K w/5D5).....	Engine harness, approx. 32 cm from auxiliary cooling fan temperature switch	
S129 (VIN N)	Engine harness, approx. 25 cm from auxiliary cooling fan switch	
S130	Engine harness, approx. 25 cm from auxiliary cooling fan switch connector breakout	
S130 (VIN H, K w/5D5)	Underhood fuse relay center breakout, approx. 15 cm from engine harness	
S130 (VIN K w/5D5).....	Engine harness, approx. 32 cm from auxiliary cooling fan temperature switch	
S130 (VIN K w/MT1, 5D5)	Engine harness, approx. 32 cm from auxiliary cooling fan temperature switch	
S130 (VIN N)	Engine harness, approx. 25 cm from auxiliary cooling fan switch	
S131 (VIN H, K auto w/C60)..	Underhood fuse relay center breakout, approx. 15 cm from engine harness	
S131 (VIN K w/manual).....	In underhood fuse relay center breakout, approx. 8 cm from engine harness	
S132 (VIN H, K auto w/C60)..	Underhood fuse relay center breakout, approx. 15 cm from engine harness	
S132 (VIN H, K w/5D5)	Underhood fuse relay center breakout, approx. 15 cm from engine harness	
S132 (VIN K w/manual).....	In underhood fuse relay center breakout, approx. 8 cm from engine harness	
S132 (VIN N)	In underhood fuse relay center breakout, approx. 8 cm from engine harness	

DIAGNOSIS - AUXILIARY COOLING FAN

TROUBLESHOOTING HINTS:

Check condition of IGN E Fuse and AUX FAN Fuse. If either fuse is open, then LOCATE and REPAIR source of overload. Replace fuse(s). Check that grounds G112 and G113 are clean and tight. Check that the Auxiliary Cooling Fan Relay is securely mounted in its socket.

Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system

disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load). Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

AUXILIARY COOLING FAN DOES NOT OPERATE

TEST	RESULT	ACTION
1. Under what conditions does the Auxiliary Cooling Fan Motor not operate.	Auxiliary Cooling Fan Motor never operates.	GO to step 2.
	Auxiliary Cooling Fan Motor will not operate via Auxiliary Cooling Fan Temperature Switch.	Go To step 6.
	Auxiliary Cooling Fan Motor will not operate via the A/C High Pressure Switch.	Go To step 7.
	Auxiliary Cooling Fan Motor will not operate via the A/C Controller.	Go To step 8
2. Remove Auxiliary Cooling Fan Relay from the Underhood Fuse/Relay Center. Connect a test lamp from Auxiliary Cooling Fan Relay cavity "B9" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (1540) wire between Auxiliary Cooling Fan Relay and the AUX FAN Fuse in the Underhood Fuse/Relay Center.
	Test lamp lights	GO TO step 3.
3. Turn Ignition Switch to RUN. Connect a test lamp from Auxiliary Cooling Fan Relay cavity "A9" to ground.	Test lamp does not light.	LOCATE and REPAIR open PNK (639) wire between IGN FUSE and the Auxiliary Cooling Fan Relay in the Underhood Fuse/Relay Center.
	Test lamp light.	GO TO step 4.
4. Connect a fused jumper from Auxiliary Cooling Fan Relay cavities "B9" to "B7".	Auxiliary Cooling Fan Motor Runs.	Check for an open in LT GRN (37) wire between S129 and Underhood Fuse/Relay Center. If OK, REPLACE Auxiliary Cooling Fan Relay.
	Auxiliary Cooling Fan Motor does not run	GO TO step 5.
5. Backprobe Auxiliary Cooling Fan Motor Connector with a test lamp from cavity "A" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (151) wire between Auxiliary Cooling Fan Motor and G122.
	Test lamp lights.	Check for an open in RED (702) wire between Underhood Fuse/Relay Center and Auxiliary Cooling Fan Motor. If OK, REPLACE Auxiliary Cooling Fan Motor.

COOLING FAN

TEST	RESULT	ACTION
6. Disconnect Auxiliary Cooling Fan Temperature Switch Connector. Turn Ignition Switch to RUN. Connect a fused jumper from Auxiliary Cooling Fan Temperature Switch Connector cavity "A" to ground.	Auxiliary Cooling Fan Motor runs.	REPLACE Auxiliary Cooling Fan Temperature Switch.
	Auxiliary Cooling Fan Motor does not run.	LOCATE and REPAIR open in LT GRN (37) wire between Auxiliary Cooling Fan Temperature Switch and S129.
7. Disconnect A/C High Pressure Switch Connector. Turn Ignition Switch to Run. Connect a fused jumper from A/C High Pressure Switch Connector cavity "A" to ground.	Auxiliary Cooling Fan Motor runs.	Check for an open in BLK (150) wire between A/C High Pressure Switch and G113. If OK, REPLACE A/C High Pressure Switch.
	Auxiliary Cooling Fan Motor does not run.	LOCATE and REPAIR open in DK GRN/WHT (1614) wire between A/C High Pressure Switch and S129.
8. Disconnect A/C Controller Connector C2. Turn Ignition Switch to RUN. Connect a fused jumper from A/C Controller Connector C2 cavity "C" to ground.	Auxiliary Cooling Fan Motor runs.	REPLACE A/C Controller
	Auxiliary Cooling Fan Motor does not run.	LOCATE and REPAIR open in DK GRN/WHT (1614) wire between A/C Controller and S129.

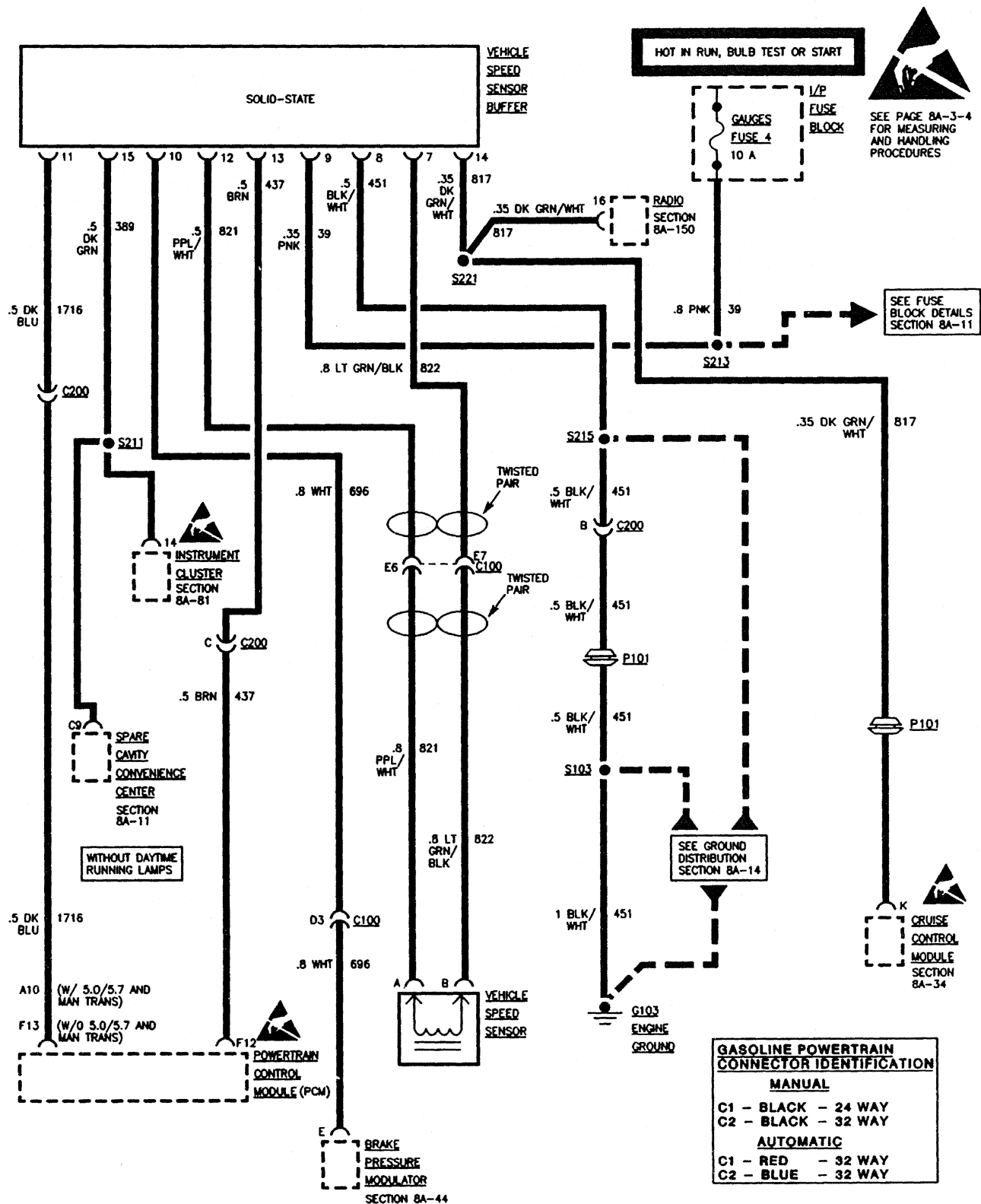
AUXILIARY COOLING FAN RUNS CONTINUOUSLY

TEST	RESULT	ACTION
1. Disconnect Auxiliary Cooling Fan Relay in the Underhood Fuse/Relay Center.	Auxiliary Cooling Fan Motor Stops.	GO TO step 2.
	Auxiliary Cooling Fan Motor continues to run.	LOCATE and REPAIR short to voltage in RED (702) wire between Underhood Fuse/Relay Center and Auxiliary Cooling Fan Motor.
2. Connect a digital multimeter from Auxiliary Cooling Fan Relay cavity "A7" to B+. Measure voltage.	Less than 10.0 volts.	REPLACE Auxiliary Cooling Fan Relay.
	More than 10.0 volts.	GO TO step 3.
3. Reconnect Auxiliary Cooling Fan Relay to Underhood Fuse/Relay Center. Disconnect Auxiliary Cooling Fan Temperature Switch Connector.	Auxiliary Cooling Fan Motor stops.	REPLACE Auxiliary Cooling Fan Temperature Switch.
	Auxiliary Cooling Fan Motor Continues to run.	GO TO step 4.
4. Disconnect A/C High Pressure Switch Connector.	Auxiliary Cooling Fan Motor stops.	REPLACE A/C High pressure Switch.
	Auxiliary Cooling Fan Motor continues to run.	Check for a short to ground in LT GRN (37) wire between Underhood Fuse/Relay Center and Auxiliary Cooling Fan Temperature Switch or in DK GRN/WHT (1614) wire between S129, A/C High Pressure Switch and the A/C Controller. If OK, REPLACE A/C Controller.

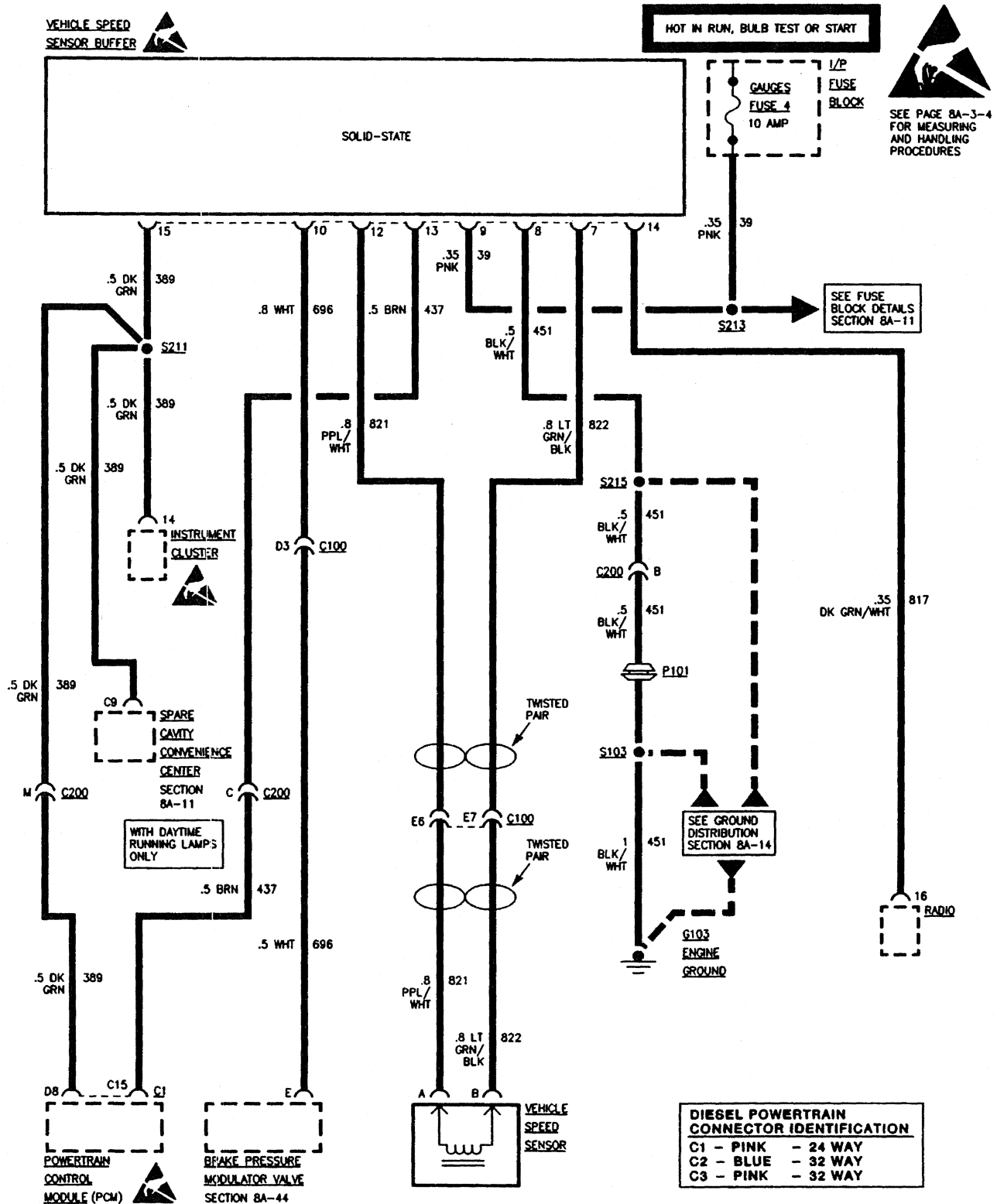
CIRCUIT OPERATION

When the Ignition Switch is in the RUN, BULB TEST or START positions, voltage is applied to the coil (power side) of the Auxiliary Cooling Fan Relay through the IGN E Fuse. Ground is supplied to the coil (ground side) of the Auxiliary Cooling Fan Relay through either the Auxiliary Cooling Fan Temperature Switch, A/C High Pressure Switch or the A/C Controller. When either of the above three components provide ground to the coil of the Auxiliary Cooling Fan Relay, it energizes and the contacts close. Voltage is applied through the AUX FAN Fuse and the closed contacts of the Auxiliary Cooling Fan Relay to the Auxiliary Cooling Fan Motor. Since the Auxiliary Cooling Fan Motor is grounded at G112, it runs.

VEHICLE SPEED SENSOR BUFFER GASOLINE ENGINES



VEHICLE SPEED SENSOR BUFFER DIESEL ENGINES



VEHICLE SPEED SENSOR BUFFER

COMPONENT	LOCATION	201-PG	FIG.	CONN
Brake Pressure Modulator				
Valve.....	Near brake master cylinder, at LH front wheelhouse	7	10	
Convenience Center	Under LH side of I/P	4, 33 .	7, 40	
Cruise Control Module	LH rear side of engine compartment, on bulkhead.....	25	30	
Fuse Block.....	Lower LH side of I/P	43	55	
Instrument Cluster.....	LH upper end of I/P			
Powertrain Control				
Module(PCM)	Under RH end of I/P, above blower motor	29	34	
Radio Connector.....	Behind radio, in center of I/P area			
Radio Control Head.....	Center of I/P			
Radio Receiver	Behind center of I/P.....	35	42	
Vehicle Speed Sensor.....	LH rear side of transmission.....	23	27	
Vehicle Speed Sensor Buffer....	Under RH end of I/P	26	31	
CONNECTORS:				
C100.....	Engine harness, inline to I/P harness	5, 31 .	8, 37	
C200.....	Under RH side of I/P, near blower motor	30, 35	35, 43	
GROMMETS:				
P101	RH lower cowl (engine compartment)	21	24	
GROUND:				
G103 (Gasoline).....	Top front center of engine (gas).....	7, 10 .	10, 13	14,17
G103 (Diesel).....	Top RH rear of engine	17, 19	20, 22	21,24
SPLICES:				
S103	I/P harness, 12.5 cm from C100 breakout.....	6, 9		
S211	Approx. 19 cm from I/P cluster connector			
S213	I/P harness, 4 cm from headlight switch breakout.....	43	55	
S215	Behind LH side of I/P.....	32, 44	39, 56	46,58
S221	I/P harness, approx. 16 cm right of turn signal flasher breakout			

VEHICLE SPEED SENSOR BUFFER

DIAGNOSIS - VEHICLE SPEED SENSOR

TROUBLESHOOTING HINTS:

1. Check condition of BRAKE Fuse. If fuse is blown, locate and repair source of overload.
 - If any PCM Diagnostic Trouble Codes are set, see Section 6E.
 - Check for a broken (or partially broken) wire inside of the insulation which could cause system failure but prove "GOOD" in a continuity/voltage check (see "Troubleshooting Procedures", Page 8A-4-0).
 - Check for proper installation of aftermarket electronic equipment which may effect the integrity of other systems (see "Troubleshooting Procedures" 8A-4-0).

CAUTION: THE FOLLOWING TEST REQUIRES THAT YOU FREE-ROLL THE REAR WHEELS OF THE VEHICLE ON THE HOIST. BE SURE THE WHEELS ARE FREE OF OBSTRUCTIONS AND THAT YOU AND OTHERS STAY CLEAR OF THE WHEELS AT ALL TIMES. FAILURE TO DO SO MAY RESULT IN INJURY OR DEATH. DO NOT BRING WHEEL SPEED ABOVE 70 MPH.

SPEEDOMETER AND ODOMETERS DO NOT OPERATE

TEST	RESULT	ACTION
1. Raise vehicle on hoist. Disconnect speed sensor connector. Connect AC voltmeter across speed sensor terminals while rolling wheels in high gear.	voltage measured.	GO to step 2.
	No voltage measured.	REPLACE VSS.
2. Connect AC voltmeter, check for voltage across CKT (821) and CKT (822) wires at vehicle speed sensor buffer connector. NOTE: Wheels must be rolling in high gear.	voltage measured.	GO to step 3.
	No voltage measured.	LOCATE and REPAIR open in CKT (821) and/or CKT (822) wires from speed sensor connector to vehicle speed sensor buffer connector.
3. Disconnect I/P connector and the connector from the vehicle speed sensor buffer. Connect ohmmeter from CKT (389) at cluster connector to CKT (389) at vehicle speed sensor buffer connector.	More than 0 ohms.	LOCATE and REPAIR open in CKT (389) wire between I/P connector and vehicle speed sensor buffer connector.
	0 ohms.	REFER to vehicle speed sensor buffer diagnosis in Section 8C of the 1995 C/K Service Manual.

VEHICLE SPEED SENSOR BUFFER**ONE OR MORE OF THE SPEED-RELATED FEATURES DO NOT OPERATE PROPERLY**

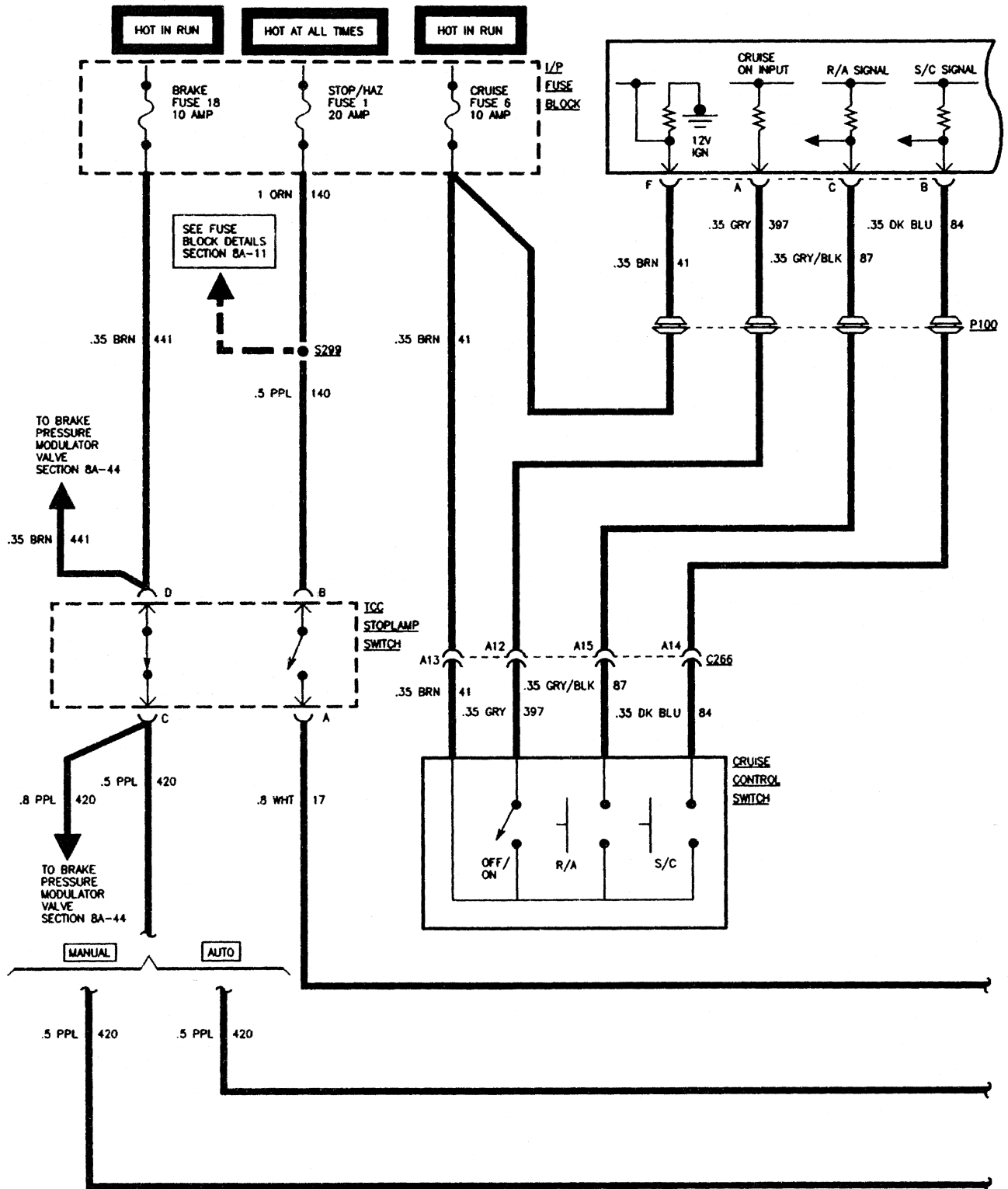
TEST	RESULT	ACTION
1. Disconnect inoperative components Ignition switch in "RUN". Measure voltage at vehicle speed input terminal.	0.6 volts or greater is measured.	GO to step 2.
	Less than 0.6 volts is measured.	Check/Repair CKT 817 open or short to ground. If ok, replace Vehicle Speed Sensor Buffer.
2. Measure voltage at vehicle speed input terminal of inoperative components while rotating wheel by hand.	Voltage varies.	Check for good contact at connector of component If ok, replace component.
	Voltage does not vary.	Check Vehicle Speed Sensor Buffer for good connector contact. If ok, replace Vehicle Speed Sensor Buffer.

CIRCUIT OPERATION

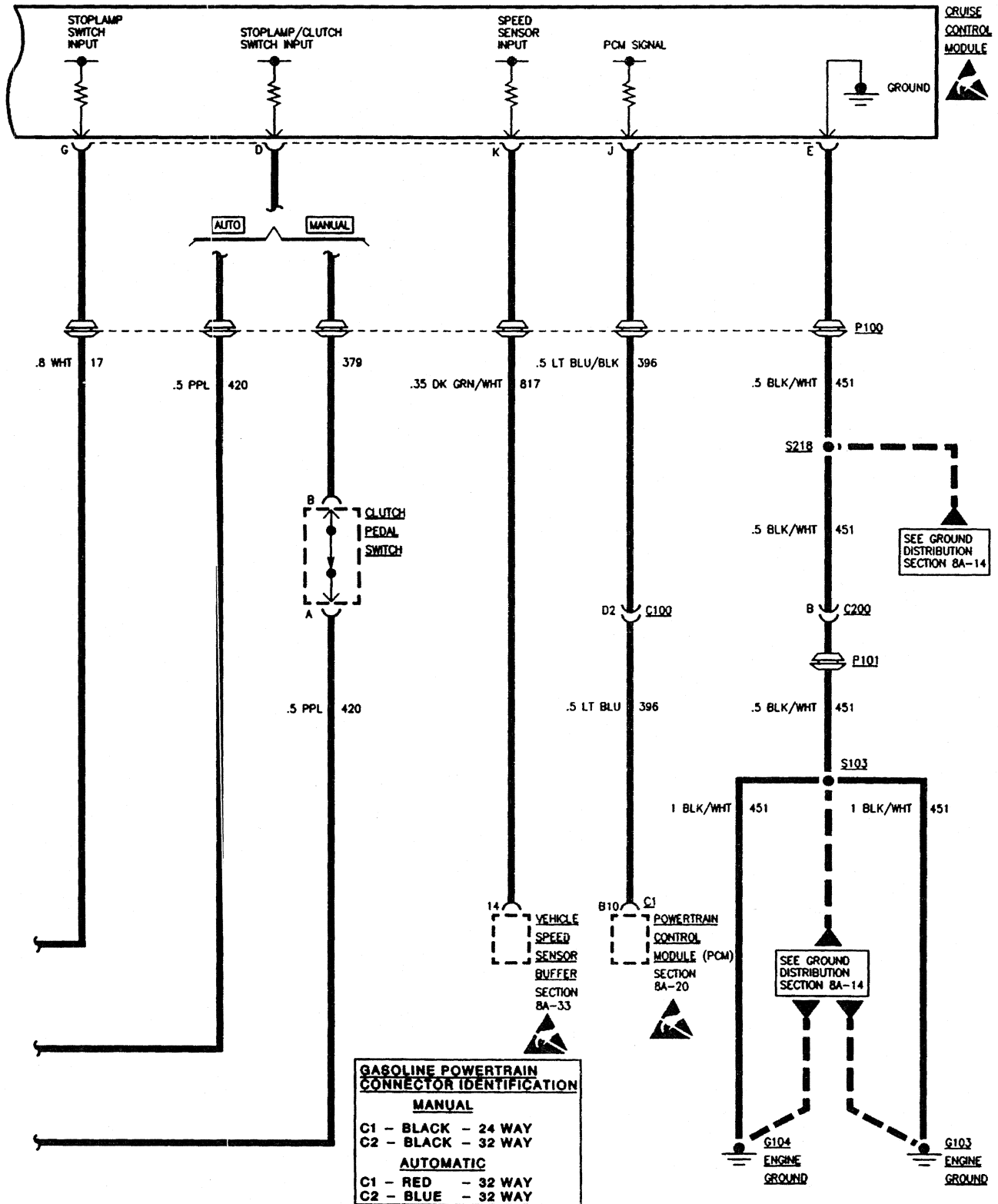
The Vehicle Speed Sensor is a gear-driven Permanent Magnet Generator housed in the vehicles transmission. This sensor generates a sine wave output with a frequency proportional to vehicle speed. The Vehicle Speed Sensor Buffer converts this signal to an output that is switched to ground at a frequency of 4000 pulses per mile at the DK GRN/WHT (817 CKT) wire output. This output varies from 16 volts to battery voltage.

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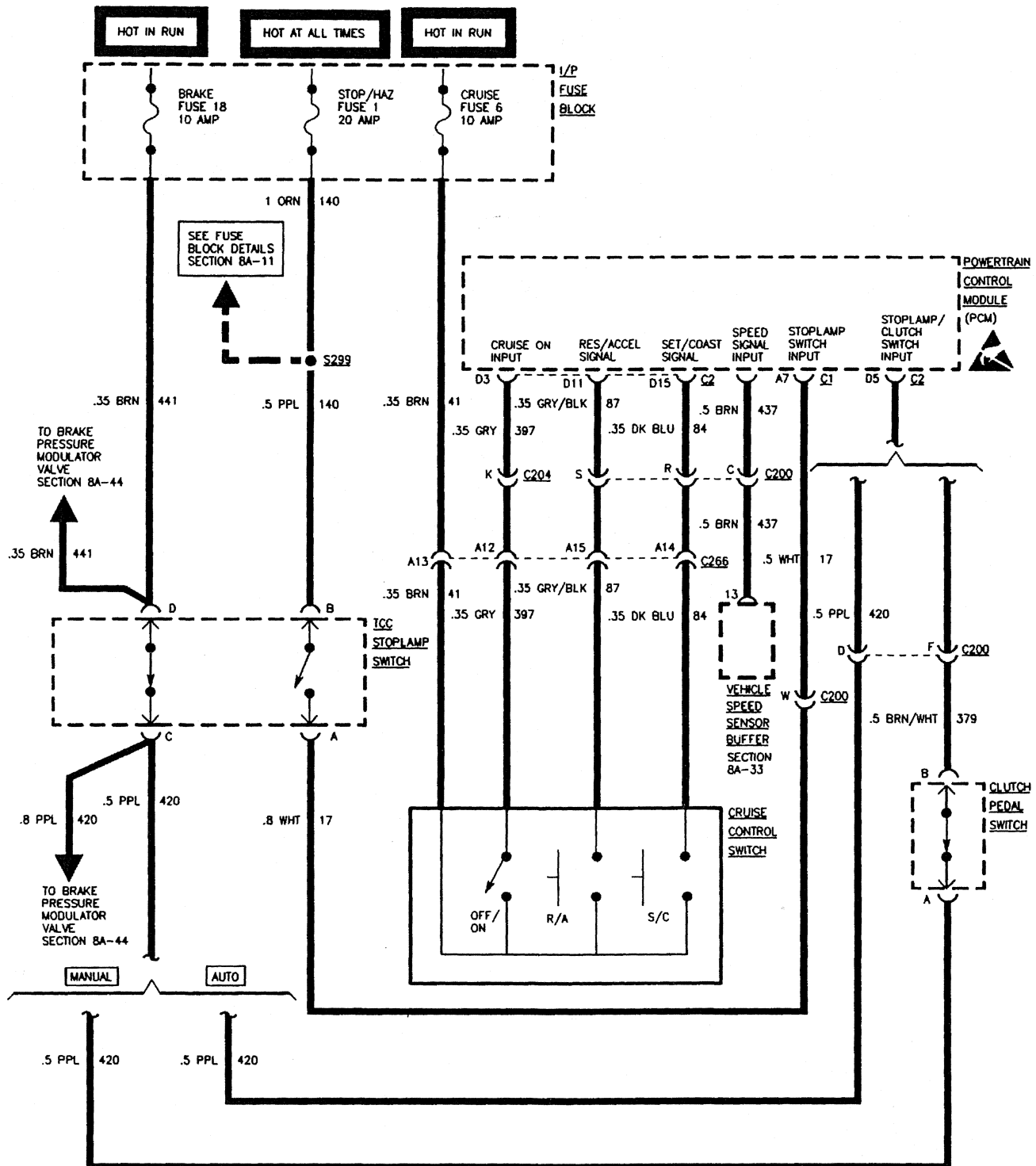
CRUISE CONTROL GASOLINE ENGINES



CRUISE CONTROL



CRUISE CONTROL DIESEL ENGINES



DIESEL POWERTRAIN CONNECTOR IDENTIFICATION		
C1 - PINK	- 24 WAY	
C2 - BLUE	- 32 WAY	
C3 - PINK	- 32 WAY	

CRUISE CONTROL

COMPONENT	LOCATION	201-PG	FIG.	CONN
Clutch Start Switch.....	At top of clutch pedal	41	53	
Cruise Control Module.....	LH rear side of engine compartment.....	31	36	
Cruise Control Switch.....	In turn signal lever.....	27	32	
Fuse Block.....	Lower LH side of I/P	43	55	
Powertrain Control Module (PCM).....	Under RH end of I/P	30	35	
TCC/Stoplamp Switch.....	Top of brake pedal.....	37	47	
Vehicle Speed Sensor Buffer.....	Under RH end of I/P	26	31	
CONNECTORS:				
C100.....	Engine harness, inline to I/P harness	5, 31..	8, 37	
C200.....	Under RH side of I/P, near blower motor	30, 35	35, 43	
C266.....	LH side of steering column, near bulkhead.....	26	31	
GROUND:				
G103 (VIN H, K)	LH front of engine near thermostat housing.....	10	13	
G103 (VIN N).....	LH front of engine near thermostat housing.....	12	15	
G104 (VIN F, S).....	RH top of cylinder head, near center.....	16	19	
G104 (VIN H, K)	LH front of intake manifold.....	10	13	
G104 (VIN N).....	LH front of engine near thermostat housing.....	12	15	
G104 (VIN P)	RH top of cylinder head, near center.....	15	18	
GROMMETS:				
P100	LH rear of engine compartment at bulkhead.....	7	10	
SPLICES:				
S103	Engine harness, approx. 19 cm from ignition coil connector breakout			
S103 (VIN F)	Engine harness, 10 cm from A/C high pressure switch breakout			
S103 (VIN P)	Engine harness, 10 cm from underhood lamp breakout			
S103 (VIN S)	Engine harness, 3 cm from A/C high pressure switch breakout			
S103 (VIN Z, H, K, N)	Engine harness, approx 5 cm from generator cable breakout			
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab - base).....	Crossbody harness, 12 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout			

CRUISE CONTROL**DIAGNOSIS - CRUISE CONTROL****TROUBLESHOOTING HINTS:**

1. Check condition of BRAKE, STOP/HAZ, and CRUISE Fuses. If fuse is open, locate and repair source of overload. Replace fuse.

2. Refer to Section 9B, for proper adjustment of Cruise Control cable.

3. for diagnosis of Cruise Control with Diesel Engine refer to Section 6E3.

SYMPTOM TABLE

Cruise Control is Inoperative	Refer to Table 1 for diagnosis.
Cruise Surges	Refer to Table 1 for diagnosis. If all OK, check for harness routing near spark plugs. Also, check Cruise Control Cable adjustment. Refer to Section 9B of the 1995 C/K Service Manual for adjustment procedures.
Cruise does not engage	Refer to Table 1 for diagnosis. If all OK, inspect/adjust Cruise Control Cable, Refer to Section 9B of the 1995 C/K Service Manual for adjustment procedures.
Loses speed	Check for proper Cruise Control Cable adjustment. Refer to Section 9B of the 1995 C/K Service Manual for adjustment procedures.
Loses speed on hills	Check for proper Cruise Control Cable adjustment. Refer to Section 9B of the 1995 C/K Service Manual for adjustment procedures.
Gains speed on down hills	System is not capable of braking vehicle.
Gains/loses a certain amount on engagement	Check for proper Cruise Control Cable adjustment. Refer to Section 9B of the 1995 C/K Service Manual for adjustment procedures.
Tap-up/down Inop	Refer to Table 2 for diagnosis.
Drops out/turns off after certain amount of miles traveled	Refer to Table 1 for diagnosis. If all OK, check resistance of brake switch. If resistance is greater than 5 ohms, replace switch and call Technical Assistance.
Resume/Accelerate Inop	Refer to Table 2 for diagnosis.
Drops out after bumps	Check in-line connectors for proper terminal contact. If all OK, Replace TCC/Stoplamp Switch. Refer to Section 5 for replacement procedures.
Drops out after turn signal/tilt wheel operation	Inspect/Repair Steering Column Wiring.

CRUISE CONTROL**Table 1 Cruise Control is Inoperative**

Step	Action	Value(s)	Yes	No
1	1. Cruise Control Switch "OFF." 2. Disconnect Cruise Control Module. 3. Ignition Switch to "RUN." 4. Frontprobe with a test light Cruise Control Module connector between terminal "F" and a known Ground. 5. Is test light "ON"?		Go to step 3	Go to step 2
2	Repair poor connection or open in circuit 41.		System OK	
3	1. Frontprobe with a test light Cruise Control Module connector between terminals "F" and "E." 2. Is test light "ON"?		Go to Step 5	Go to Step 4
4	Repair poor connection or open in circuit 451 between Cruise Control Module connector and Ground.		System OK	
5	1. Cruise Switch "ON." 2. Frontprobe with a test light Cruise Control Module connector between terminals "E" and "A". 3. Is test light "ON"?		Go to Step 6	Go to Step 21
6	1. Frontprobe with a test light Cruise Control Module connector between terminal "E" and "B." 2. While observing the test light press and hold the Set/Coast switch. 3. Does test light illuminate when switched?		Go to Step 8	Go to Step 7
7	1. Check for a short to ground on circuit 84. 2. Check circuit 84 for a poor connection or an open. If Test Light remains on at all Times, Check For short to B+. 3. If OK, replace Multi-function lever (Refer to SECTION 3F of Service Manual).		System OK	
8	1. Frontprobe with a test light Cruise Control Module connector between terminals "E" and "L". 2. Is test light "ON"?		Go to Step 9	Go to Step 10
9	1. Check circuit 87 for a short to circuit 84. 2. If OK, replace Multi-function Lever (Refer to SECTION 3F of Service Manual).		System OK	
10	1. Frontprobe with a test light Cruise Control Module connector between terminals "E" and "D". 2. Is test light "ON"?		Go to Step 14	Go to Step 11
11	1. Backprobe with a test light TCC/Stoplamp Switch connector terminal "D" and Ground. 2. Is test light "ON"?		Go to Step 13	Go to Step 12
12	1. Check circuit 441 for a poor connection or an open between TCC/Stoplamp Switch and fuse. 2. Check TCC/Stoplamp Switch for proper alignment. 3. If OK, replace TCC/Stoplamp Switch.		System OK	
13	1. Repair poor connection or open in circuit 420.		System OK	
14	1. Frontprobe with a test light Cruise Control Module connector between terminal "E" and terminal "B". 2. Is test light "ON"?		Go to Step 15	Go To Step 16
15	1. Check circuit 84 for a short to "B+". 2. If OK, replace Multi-function Lever (Refer to SECTION 3F of Service Manual).		System OK	

8A - 34 - 6 ELECTRICAL DIAGNOSIS**CRUISE CONTROL**

Step	Action	Value(s)	Yes	No
16	1. Frontprobe with a test light Cruise Control Module connector between terminal "E" and terminal "C". 2. Is test light "ON"?		Go to Step 17	Go to Step 18
17	1. Check circuit 87 for a short to "B+". 2. If OK, replace Multi-function Lever (Refer to Section 3F of Service Manual).		System OK	
18	1. Raise the drive wheels. 2. Measure voltage with a Digital Voltmeter at Cruise Control Module connector between terminal "K" and ground. 3. While observing the display of the Digital Voltmeter, rotate the drive wheels by hand. 4. Does voltage vary between approximately 5 volts and ground?	0 - 5 volts	Go to Step 20	Go to Step 19
19	1. Check circuit 817 for a poor connection or an open between the Cruise Control Module connector and Vehicle Speed Sensor Buffer. 2. If OK, refer to SECTION 8A-33 for VSS diagnostics.		System OK	
20	1. Replace the Cruise Control Module.		System OK	
21	1. Frontprobe with a test light Cruise Control Module connector between terminal "E" and terminal "B". 2. While observing the test light press and hold the Set/Coast Switch. 3. Does test light illuminate?		Go to Step 22	Go to Step 23
22	1. Check circuit 397 for a short to ground. 2. Check circuit 397 for a poor connection or an open between the Cruise Control Module connector and the Multi-function Lever. 3. If OK, replace the Multi-function Lever (Refer to SECTION 3F of Service Manual).		System OK	
23	1. Frontprobe with a test light Cruise Control Module connector between terminal "C" and terminal "E". 2. While observing test light press and hold the R/A Switch. 3. Does test light illuminate?		Go to Step 24	Go to Step 24
24	1. Check circuit 84 for a short to circuit 87. 2. Check for a poor connection at the Multi-function Lever. 3. If OK, replace the Multi-function Lever (Refer to Section 3F of Service Manual).		System OK	
25	1. Check for a poor connection or an open in circuit 139 between the Multi-function Lever and connector C202. 2. Check for a poor connection or an open in circuit 41 between connector C202 and splice S206. 3. If OK, replace the Multi-function Lever (Refer to Section 3F of Service Manual).		System OK	

CRUISE CONTROL

Table 2 Cruise Control Will Not Resume, Accelerate, Tap-Up Or Tap-Down

Step	Action	Value(s)	Yes	No
1	1. Disconnect Cruise Control Module. 2. Ignition Switch to "RUN." 3. Cruise Control Switch to "ON." 4. Frontprobe with a test light Cruise Control Module connector between terminal "C" and Ground. 5. While observing test light, press and hold the R/A switch. 6. Does the test light illuminate?		Go to Step 2	Go to Step 3
2	1. Check circuit 87 for a short to ground. 2. Check for poor connection at Cruise Control Module terminal "C." 3. If OK, replace Cruise Control Module. Refer to Cruise Control Module replacement in SECTION 9B. 4. Is replacement complete?		System OK	
3	1. Check circuit 87 for a poor connection or an open. 2. If OK, replace Multi-function Lever. Refer to SECTION 3F for Multi-function Lever replacement. 3. Is replacement complete? System OK			

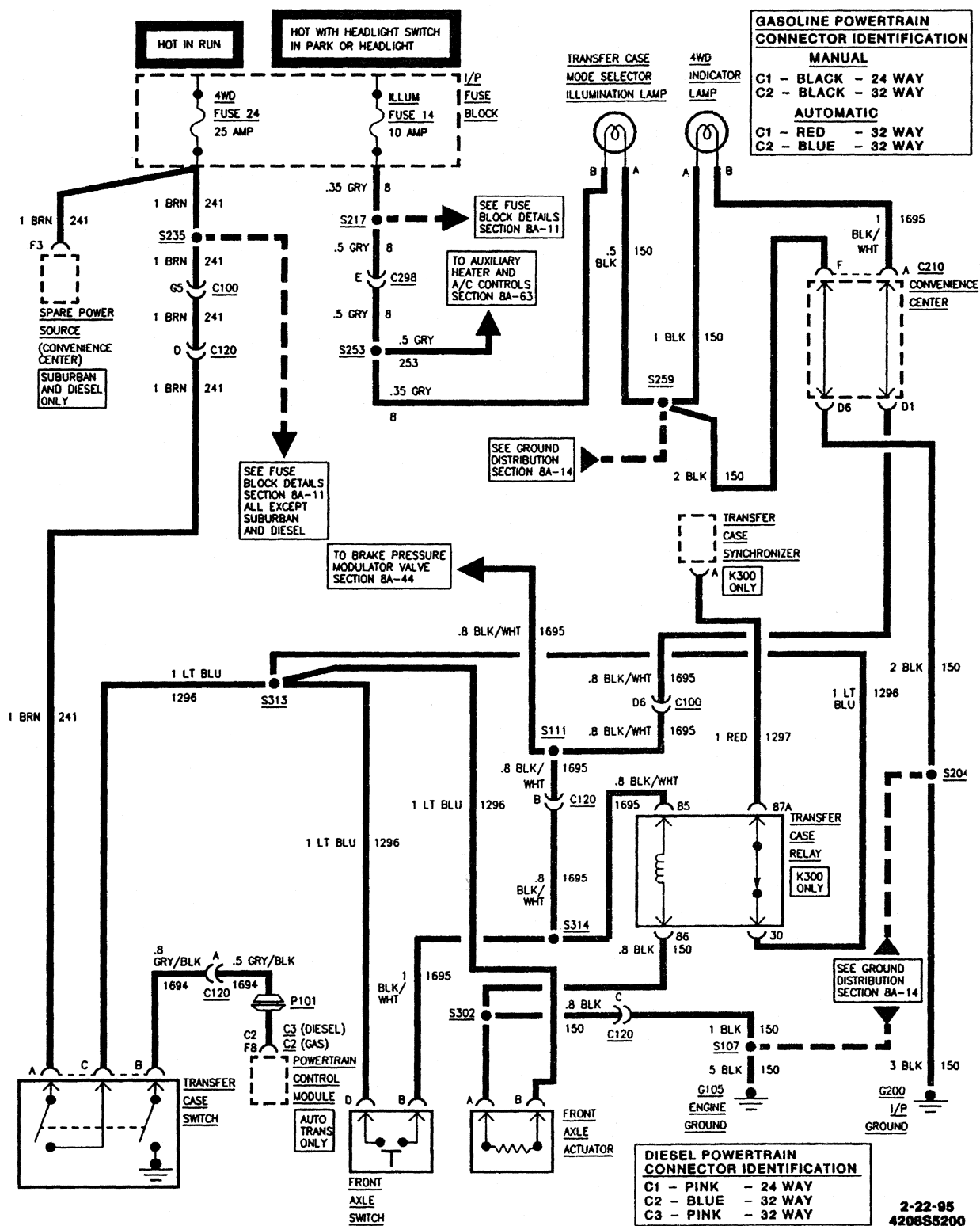
CIRCUIT OPERATION

The Cruise Control regulates the speed of the vehicle in response to driver commands.

The Cruise Control Module contains electronic circuitry and a stepper motor. The other system components are as follows:

- Cruise Control Switch
- Set Switch
- Cruise Control Brake Switch
- Clutch Switch
- Vehicle Speed Sensor Buffer

The Cruise Control Module receives voltage from the GAUGES Fuse in RUN or START. A speed signal is received from the Vehicle Speed Sensor Buffer. The driver gives his input to the Cruise Control Module through the system components previously listed. The Cruise Control Module circuitry receives the driver's input and generates electrical pulses. These pulses cause the stepper motor and its output reel to rotate. The throttle is controlled by a cable wound on the output reel. The Cruise Control Module also contains a switch which releases the cable when the Cruise Control System must be shut off. This switch will operate when the Brake Pedal is depressed, the Clutch Pedal is depressed, the Cruise Control System is turned off or the Cruise Control System detects a failure.



COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center	Under LH side of I/P.....	4.....	7	
Four-Wheel Drive Indicator Lamp.....	Center floor console.....	55.....	67	
Front Axle Actuator.....	RH side of front drive axle.....	22.....	25	
Fuse Block.....	Lower LH side of I/P	43.....	55	
Powertrain Control Module (PCM).....	Under RH end of I/P.....	30.....	35	
Transfer Case Relay.....	RH rear of engine compartment, near center of cowl	22.....	25	
Transfer Case Shift Illumination Lamp	At transfer case selector lever.....	55.....	67	
Transfer Case Switch.....	LH top of transfer case.....	25.....	30	
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7.....	10	
C120 (w/4-WD).....	Top of engine, RH of distributor.....	21.....	24	
C210.....	At convenience center.....	27.....	32	
C298.....	Behind LH side of I/P, near convenience center.....	27.....	32	
GROMMETS:				
P101	RH lower cowl (engine compartment).....	21.....	24	
GROUND:				
G105 (VIN P).....	RH top rear of cylinder head.....	15.....	18	
G105 (VIN Z, H, K)	RH front wheelhouse	1.....	4	
G200.....	Behind LH side of I/P, below fuse block			
SPLICES:				
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout			
S111 (VIN F)	Engine harness, 20 cm into brake pressure modulator valve breakout			
S111 (VIN P)	Engine harness, 20 cm into brake pressure modulator valve breakout			
S111 (VIN S)	Engine harness, 20 cm into brake pressure modulator valve breakout			
S111 (VIN Z, H, K, N).....	Engine harness, approx. 20 cm into brake pressure modulator valve (BPMV) breakout			
S235	I/P harness, approx. 8 cm left of cruise control harness breakout			
S235 (Diesel).....	Approx. 27 cm from I/P cluster connector			
S253 (Suburban).....	Crossbody harness, 4 cm left of I/P harness breakout			

FOUR WHEEL DRIVE INDICATOR

COMPONENT	LOCATION	201-PG FIG. CONN
S259 (Suburban).....	Crossbody harness, 17 cm right of door lock relay breakout	
S259 (Suburban).....	Crossbody harness, 17 cm right of door lock relay breakout	
S302 (K100/200 w/manual or LD auto trans)	4WD harness, 10 cm right of engine harness breakout	
S302 (K300 w/7.4L)	4WD harness, 7 cm from transfer case relay breakout	
S302 (K300 w/o 7.4L)	4WD harness, 13 cm from transfer case relay breakout	
S313 (K300)	4WD harness, 7 cm into transfer case relay breakout	
S314 (K300 w/7.4L)	4WD harness, 13 cm from transfer case relay breakout	
S314 (K300 w/o 7.4L)	4WD harness, 7 cm from transfer case relay breakout	

DIAGNOSIS - FOUR-WHEEL DRIVE INDICATOR

TROUBLESHOOTING HINTS:

1. Make sure all mechanical components are operative before diagnosing electrical portion of four-wheel drive system.
2. To determine whether vehicle is in two-wheel drive or four-wheel drive, lift it up so wheels can spin freely.
3. Check to see that 4WD and ILLUM fuses are not blown. If blown, locate and repair source of overload and replace fuse.
4. While performing the following diagnostic procedures, Ignition Switch must be in RUN and 4WD Control Lever must be in 4WD ENGAGED position.

FOUR-WHEEL DRIVE WILL NOT DISENGAGE

TEST	RESULT	ACTION
1. Place transfer Case in 2WD position Disconnect transfer case switch	4WD disengages.	REPLACE transfer case switch.
	4WD does not disengage.	Go to Step 2.
2. Disconnect Front Axle Actuator	4WD disengages	Repair Short to Battery in CKT 1296.
	4WD does not disengage	REPLACE Front Axle Actuator.

FOUR-WHEEL DRIVE INDICATOR LAMP WILL NOT TURN OFF

TEST	RESULT	ACTION
1. Place transfer case in 2WD position. Disconnect transfer case switch	Indicator Lamp goes off.	REPLACE Transfer Case Switch
	Indicator Lamp Stays on.	REPAIR short to battery in CKT 1296.

FOUR-WHEEL DRIVE WILL NOT ENGAGE

TEST	RESULT	ACTION
1. Disconnect Front Axle Actuator. Place Transfer Case in "4WD" Connect a Test Lamp from term "B" to ground with Ignition Switch in "RUN"	Test Lamp on.	Check for Open in CKT 150. If Ok REPLACE Front Axle Actuator.
	Test Lamp does not Light.	GO to Step 2.
2. Disconnect Transfer Case Switch. Connect a Test lamp Term "A" to ground with ignition in "RUN"	Test lamp lights.	GO to step 3.
	Test lamp does not light.	REPAIR open in CKT 241.
3. Connect a Fused Jumper Between Term "A" & "C" of Transfer Case Switch. Connect a Test Lamp Term "B" to ground at front axle actuator with Ignition Switch in "RUN"	Test lamp lights.	REPLACE Transfer Case Switch
	Test lamp does not light.	REPAIR open in CKT 1296

FOUR-WHEEL DRIVE ENGAGES BUT 4WD INDICATOR LAMP WILL NOT LIGHT

TEST	RESULT	ACTION
1. Disconnect 4WD Indicator lamp. Place Transfer Case Switch to 4WD. With Ignition Switch in "RUN". Connect a Test lamp Term "B" to ground	Test lamp lights.	Check REPLACE Blub. If OK, repair open in CKT 150.
	Test lamp does not light.	Check for an open in CKT 1695. If OK, REPLACE Front Axle Actuator.

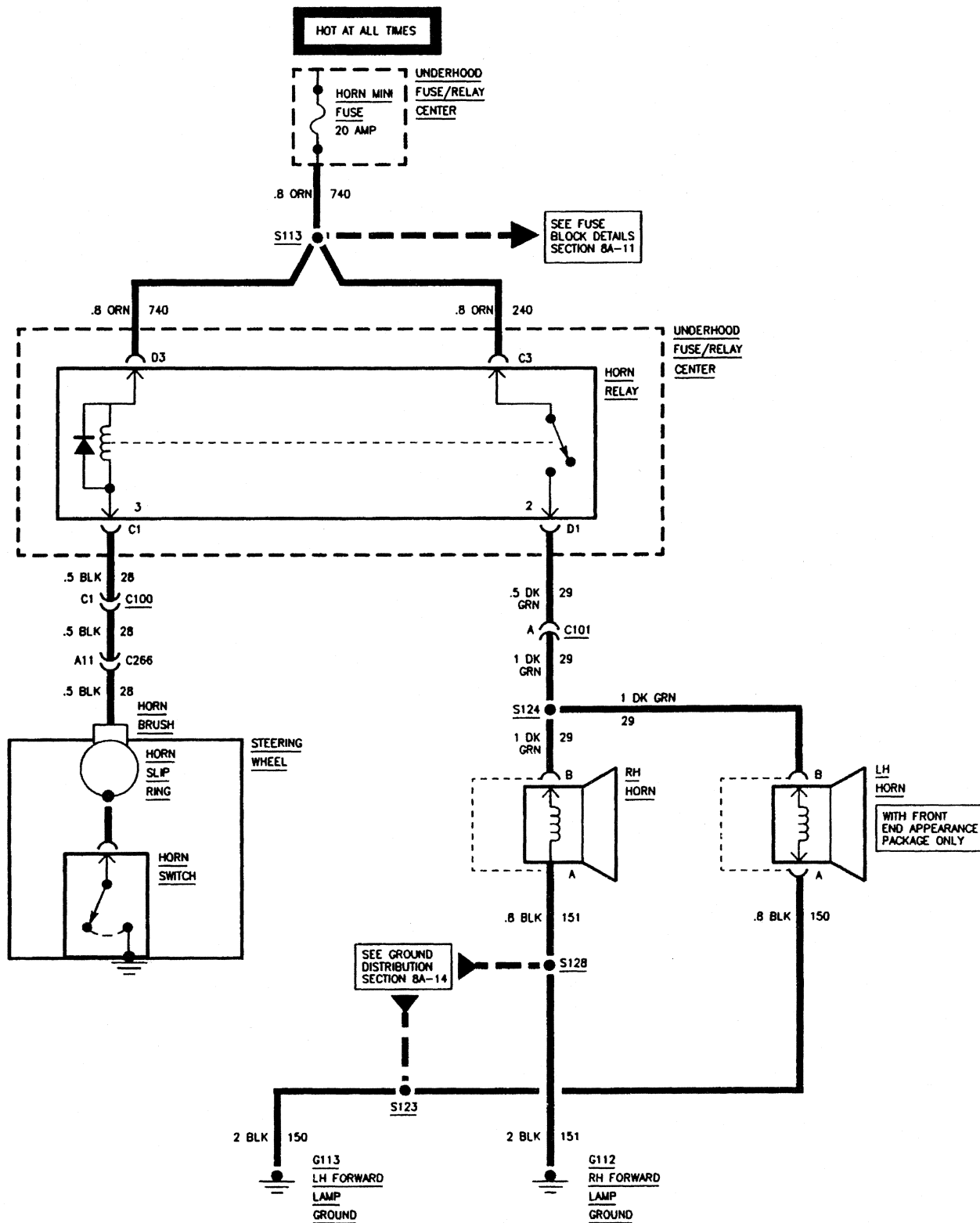
CIRCUIT OPERATION

When the Ignition Switch is in RUN and the four-wheel drive control lever is engaged, the transfer case switch closes and battery voltage is supplied across the front axle actuator. The front axle actuator energizes and the four-wheel drive gears are meshed. This meshing action of the four-wheel drive gears closes the front axle switch, and battery voltage is supplied through CKT 1695 across the four-wheel drive indicator lighting the bulb.

Battery voltage is also supplied through the front axle switch contacts and CKT 1695 to the rear-wheel or four-wheel antilock brake module. This will modify the antilock braking system operation in 4WD mode.

A transfer case relay is used on one-ton vehicles with four-wheel drive. This relay is de-energized when the vehicle is in 4WD mode. From the transfer case relay, voltage is supplied to the transfer case synchronizer until 4WD mode is selected.

HORNS



COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead	34	41	
Fuse Block - I/P Harness	Lower LH side of I/P	26	31	
Horn Relay	On underhood fuse/relay center			
Horns	At front of vehicle	3	6	
Multi-Function Switch	LH upper side of steering column			
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C101	LH rear of engine compartment near fuse relay center	4	7	
C206	Under I/P, RH side of steering column			
C266	LH side of steering column, near bulkhead	26	31	
GROUND:				
G112	RH front of engine compartment, below underhood reel lamp			
G113	On radiator support, near LH headlamp			
G104	On LH radiator support	2, 3....	5, 6	
G105	RH inner fender, near battery	2, 3....	4, 6	
SPLICES:				
S103	RH side, near headlamp	2, 3....	5, 6	
S104	LH side, near headlamp	3	6	
S111	Forward lamp harness, near LH side of radiator			
S113 (VIN P)	Engine harness, 10 cm into underhood fuse/relay center breakout			
S113 (VIN S)	Engine harness, 10 cm into underhood fuse/relay center breakout			
S113 (VIN Z, H, K, N)	Engine harness, approx. 10 cm into underhood power distribution center breakout			
S123	Forward lamps harness, 5 cm right of LH horn breakout			
S124	Forward lamps harness, 3 cm right of LH horn breakout			
S128	Forward lamps harness, 5 cm right of RH headlamp breakout			
S208	Behind LH side of I/P	43	55	

HORNS

DIAGNOSIS - HORNS

TROUBLESHOOTING HINTS:

1. Check condition of HORN MINI Fuse. If fuse is blown, locate and repair source of overload. Replace fuse.

- Check for a broken (or partially broken) wire inside of the insulation which could cause a system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).

- Check for proper installation of aftermarket electronic equipment which may affect the integrity of other system (see "Troubleshooting Procedures," SECTION 8A-4).

HORN(S) ARE INOPERATIVE

TEST	RESULT	ACTION
1. Is vehicle equipped with LH Horn (with V22 only)?	YES.	GO to step 2.
	NO.	GO to step 5.
2. Does RH Horn operate.	YES.	GO TO step 3.
	NO.	GO TO step 5.
3. Backprobe LH Horn Connector with a test lamp from cavity "A" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between LH Horn and G113.
	Test lamp lights.	GO TO step 4.
4. Backprobe LH Horn Connector with a test lamp from cavity "B" to ground.	Test lamp lights.	REPLACE LH horn.
	Test lamp does not light.	LOCATE and REPAIR open in DK GRN (29) wire between LH Horn and S124.
5. Disconnect RH Horn Connector. connect a test lamp from RH Horn Connector cavity "B" to ground. Press horn button.	Test lamp lights.	GO TO step 6.
	Test lamp does not light.	GO TO step 7.
6. Connect a test lamp from RH Horn Connector cavity "A" to B+.	Test lamp lights.	REPLACE RH Horn.
	Test lamp does not light.	LOCATE and REPAIR open in BLK(151) wire between RH Horn and G112.
7. Reconnect RH Horn Connector. Remove Horn Relay from Fuse/Relay Center. Connect a test lamp from Horn Relay cavity "C3" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN(740) wire from Mini Fuse to Fuse/Relay Center.
	Test lamp lights.	GO TO step 8.
8. Momentarily connect a fused jumper from Horn Relay cavity "C3" to "D1."	Horn(s) sound.	GO TO step 9.
	Horn(s) did not sound.	LOCATE and REPAIR open in DK GRN (29) wire between Fuse/Relay Center and RH Horn.
9. Connect a test lamp from Horn Relay cavity "D3" to ground.	Test lamp lights.	GO TO step 10.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (740) wire between Mini Fuse and Fuse/Relay Center.

TEST	RESULT	ACTION
10. Connect a test lamp from Horn Relay cavity "C1" to B+. Press horn button.	Test lamp lights.	REPLACE Horn Relay.
	Test lamp does not light.	GO TO step 11.
11. Disconnect Horn Switch Connector. Connect a test lamp from Horn Switch terminal (switch side) to B+. Press horn button.	Test lamp does not light.	REPLACE Horn Switch.
	Test lamp lights.	Check for an open in wiring between Horn Switch and Fuse/Relay Center. If OK, REPLACE Horn Brush and Horn Slip Ring.

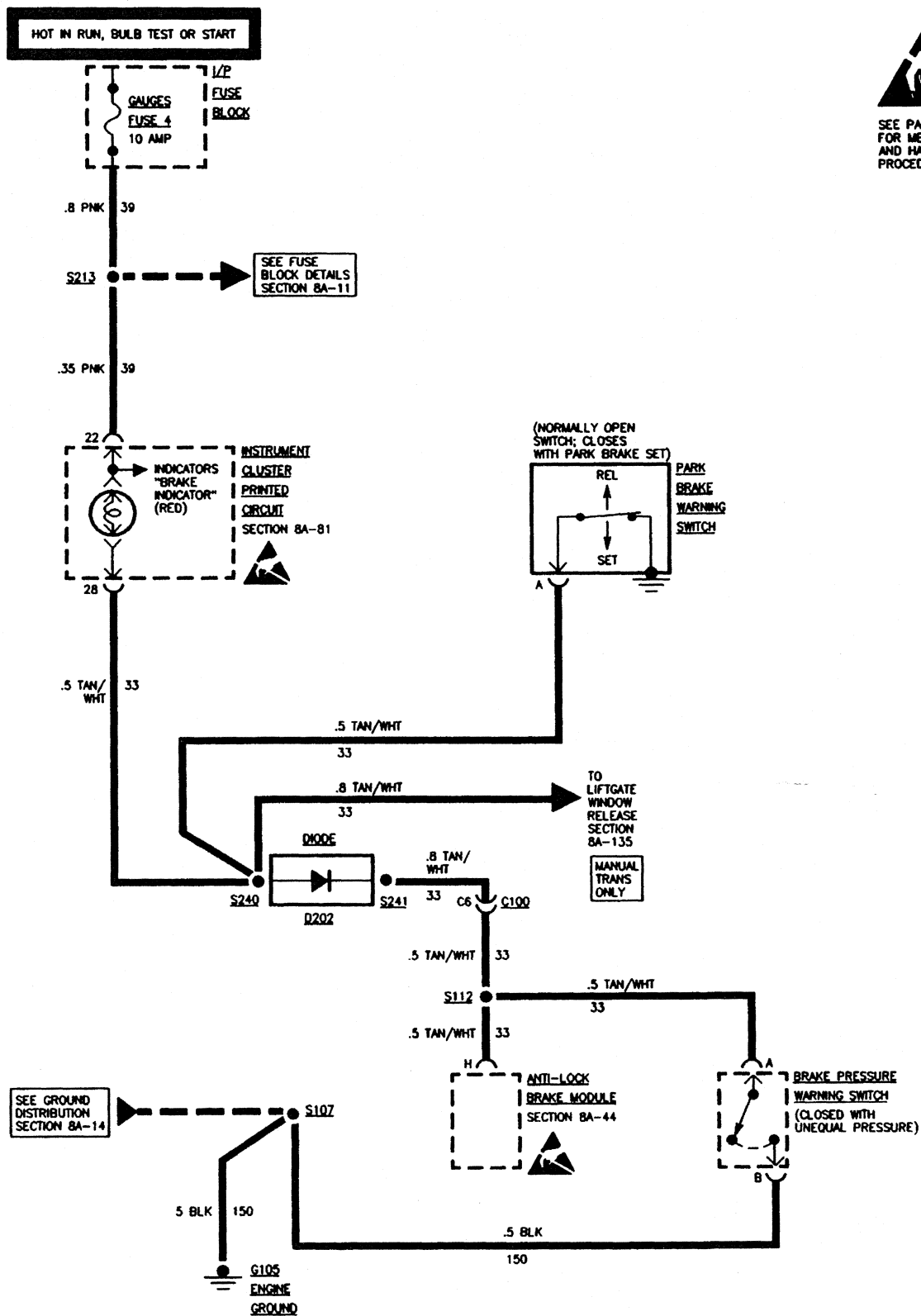
HORN(S) SOUND CONTINUOUSLY WITHOUT HORN SWITCH DEPRESSED

TEST	RESULT	ACTION
1. Remove Horn Relay.	Horn(s) do not stop.	LOCATE and REPAIR short to B+ in DK GRN(29) wire between Fuse/Relay Center and RH Horn or LH Horn (with V22).
	Horn(s) stop.	GO TO step 2.
2. Connect a test lamp from Horn Relay cavity "C1" to B+.	Test lamp does not light.	REPLACE Horn Relay.
	Test lamp lights.	GO TO step 3.
3. Disconnect Horn Switch Connector. Connect a test lamp from Horn Switch terminal (switch side) to B+.	Test lamp lights.	REPLACE Horn Switch.
	Test lamp does not light.	Check for a short to ground in wiring between Horn Switch and Fuse/Relay Center or in Horn Brush/Horn Slip Ring.

CIRCUIT OPERATION

Voltage is applied at all times to the Horn Relay through the HORN MINI FUSE. When the Horn Switch is depressed, the Horn Switch contacts close, thus providing a ground to the coil of the Horn Relay. When the coil of the relay is grounded, the relay energizes and the contacts close, applying battery voltage directly to the RH Horn and LH Horn (with V22 only). Because the RH Horn is grounded at G112 and the LH Horn (with V22 only) at G113, the Horn(s) will sound as long as the Horn Switch is depressed.

BRAKE WARNING SYSTEM WITHOUT DAYTIME RUNNING LAMPS



SEE PAGE 8A-3-4
FOR MEASURING
AND HANDLING
PROCEDURES

BRAKE WARNING SYSTEM

COMPONENT	LOCATION	201-PG	FIG.	CONN
Brake Pressure Warning Switch	On rear of Brake Pressure Modulator valve (BPMV) casting			
Daytime Running Lamps (DRL) Module	Under LH side of I/P, taped on I/P harness			
I/P Fuse Block	Lower LH side of I/P			
Ignition Switch	Under I/P, on steering column			
Park Brake Warning Switch	At park brake, under LH end of I/P			
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C266	LH side of steering column, near bulkhead	26	31	
DIODES:				
D201	I/P harness, approx. 11 cm from cruise control harness breakout			
D202 (Crew Cab)	I/P harness, approx. 4 cm left of turn signal flasher breakout			
D202 (w/DRL)	I/P harness, approx. 4 cm from turn signal flasher breakout			
D202 (w/o DRL)	I/P harness, approx. 11 cm from cruise control harness breakout			
GROUND:				
G105 (VIN P)	RH top rear of cylinder head	15	18	
G105 (VIN Z, H, K)	RH front wheelhouse	1	4	
SPLICES:				
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S)	Engine harness, 5 cm from transmission harness breakout			
S112 (VIN F)	Engine harness, 55 cm into brake pressure modulator valve breakout			
S112 (VIN P)	Engine harness, 52 cm into brake pressure modulator valve breakout			
S112 (VIN S)	Engine harness, 55 cm into brake pressure modulator valve breakout			
S112 (VIN Z, H, K, N)	Engine harness, approx. 53 cm into brake pressure modulator valve (BPMV) breakout			
S213	I/P harness, approx. 16 cm right of fuse block breakout			
S213 (Crew Cab, VIN F)	I/P harness approx. 16 cm right of breakout for LH door jamb switch			
S213 (Diesel)	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout			
S223	I/P harness, approx. 11 cm left of cruise control harness breakout			
S223 (Diesel)	I/P harness, approx. 11 cm left of breakout for crossbody harness connector C298			

BRAKE WARNING SYSTEM

COMPONENT	LOCATION	201-PG FIG. CONN
S224	I/P harness, approx. 11 cm left of cruise control harness breakout	
S224 (Diesel)	I/P harness, approx. 11 cm left of breakout for crossbody harness connector C298	
S240 (Crew Cab, VIN F)	I/P harness, approx. 4 cm left of turn signal flasher breakout	
S240 (Diesel)	I/P harness, approx. 11 cm left of breakout crossbody harness connector C298	
S240 (w/DRL)	I/P harness, approx. 4 cm left of turn signal flasher breakout	
S240 (w/o DRL)	I/P harness, approx. 11 cm from cruise control harness breakout	
S241 (Crew Cab, VIN F)	I/P harness, approx. 4 cm left of turn signal flasher breakout	
S241 (Diesel)	I/P harness, approx. 11 cm left of breakout crossbody harness connector C298	
S241 (w/DRL)	I/P harness, approx. 4 cm left of turn signal flasher breakout	
S241 (w/o DRL)	I/P harness, approx. 11 cm from cruise control harness breakout	

DIAGNOSIS - BRAKE WARNING SYSTEM**TROUBLESHOOTING HINTS:**

1. Check condition of GAUGES Fuse 4. If fuse is Open, locate and repair source of overload. Replace fuse.
2. Check that G105 is clean and tight.
3. Check the "BRAKE" Indicator bulb for an open filament.
4. Check that the parking brake is fully released.
5. Make sure that there is an adequate amount of brake fluid in the reservoir.

Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load). Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

BRAKE INDICATOR REMAINS ON CONTINUOUSLY

TEST	RESULT	ACTION
1. Disconnect park brake switch connector. Turn Ignition Switch to RUN. Check that parking brake is released.	"Brake" indicator turns OFF.	CHECK for proper adjustment of park brake Warning switch. If OK, REPLACE Park Brake Warning Switch.
	Brake indicator lamp goes out.	GO to step 2.
2. Disconnect brake pressure warning switch connector.	Brake indicator turns OFF.	Refer to SECTION 5A for diagnosis of the Hydraulic Brake System.
	Brake indicator remains lit.	GO TO step 3.

8A - 41 - 4 ELECTRICAL DIAGNOSIS**BRAKE WARNING SYSTEM**

TEST	RESULT	ACTION
3. Disconnect Antilock Brake Module Connector.	Brake indicator turns OFF.	Refer to SECTION 5E1 for diagnosis of the Four Wheel Antilock Brake System.
	Brake indicator remains lit.	If vehicle is equipped with Daytime Running Lamps (DRL), then GO TO step 4. If vehicle is not equipped with Daytime Running Lamps (DRL), then check for a short to ground in TAN/WHT (33) wire between Instrument Cluster Printed Circuit, Park Brake Warning Switch, Brake Pressure Warning Switch, Antilock Brake Module and Rear Window Release Solenoid (if equipped). If OK, REPLACE Instrument Cluster Printed Circuit.
4. Disconnect Daytime Running Lamps (DRL) Module Connector.	"BRAKE" Indicator turns OFF.	REPLACE Daytime Running Lamps (DRL) Module.
	"BRAKE" Indicator remains lit.	GO TO step 5.
5. Disconnect Instrument Cluster Printed Circuit Connector. Connect a digital multimeter from Instrument Cluster Printed Circuit Connector cavity "28" to ground. Check for continuity to ground.	No continuity.	REPLACE Instrument Cluster Printed Circuit.
	Continuity.	Check for a short to ground in TAN/WHT (33) wire between Ignition Switch, Park Brake Warning Switch, Daytime Running Lamps (DRL) Module, Antilock Brake Module, Brake Pressure Warning Switch and Rear Window Release Solenoid (if equipped). If OK, REPLACE Ignition Switch.

BRAKE INDICATOR IS INOPERATIVE

TEST	RESULT	ACTION
1. Under what condition(s) is the "BRAKE" Indicator inoperative?	"BRAKE" Indicator does not light with parking brake engaged.	GO TO step 2.
	"BRAKE" Indicator does not light when Ignition Switch is cycled from the "LOCK" to the RUN position (Antilock Brake System initial self test).	GO TO step 3.
	"BRAKE" Indicator does not light when the Hydraulic Brake System has low brake pressure in front or rear brakes.	GO TO step 4.
	"BRAKE" Indicator does not light while Ignition Switch is in the BULB TEST position (if equipped with Daytime Running Lamps only).	GO TO step 5.
	"BRAKE" Indicator is completely inoperative.	GO TO step 6.

BRAKE WARNING SYSTEM

TEST	RESULT	ACTION
2. Disconnect Park Brake Warning Switch Connector. Turn Ignition Switch to RUN. Connect a fused jumper from Park Brake Warning Switch Connector cavity to ground.	"BRAKE" Indicator lights.	Check for improper adjustment of the Park Brake Warning Switch. If OK, REPLACE Park Brake Warning Switch.
	"BRAKE" Indicator does not light.	LOCATE and REPAIR open in TAN/WHT (33) wire between S240 and Park Brake Warning Switch.
3. Disconnect Antilock Brake Module Connector. Turn Ignition Switch to RUN. Connect a fused jumper from Antilock Brake Module Connector cavity "H" to ground.	"BRAKE" Indicator lights.	Refer to SECTION 5E1 for diagnosis of the Four Wheel Antilock Brake System.
	"BRAKE" Indicator does not light.	LOCATE and REPAIR open in TAN/WHT (33) wire between S240 and Antilock Brake Module.
4. Disconnect Brake Pressure Warning Switch Connector. Turn Ignition Switch to RUN. Connect a fused jumper from Brake Pressure Warning Switch Connector cavity "A" to ground.	"BRAKE" Indicator lights.	Check for an open in BLK (150) wire between Brake Pressure Warning Switch and G105. If OK, refer to SECTION 5A for diagnosis of the Combination Valve.
	"BRAKE" Indicator does not light.	LOCATE and REPAIR open in TAN/WHT (33) wire between S240 and Brake Pressure Warning Switch.
5. Backprobe Ignition Switch Connector with a fused jumper from cavity "D" to ground. Turn Ignition Switch to RUN.	"BRAKE" Indicator lights.	REPLACE Ignition Switch.
	"BRAKE" Indicator does not light.	LOCATE and REPAIR open in TAN/WHT (33) wire between S240 and Ignition Switch.
6. Disconnect Instrument Cluster Printed Circuit Connector. Turn Ignition Switch to RUN. Connect a test lamp from Instrument Cluster Printed Circuit Connector cavity "22" to ground.	Test lamp lights.	Check for an open in BLK (150) wire between Brake Pressure Warning Switch and G105. If OK, refer to SECTION 5A for diagnosis of the Combination Valve.
	Test lamp does not light.	LOCATE and REPAIR open in PNK (39) wire between I/P Fuse Block and Instrument Cluster Printed Circuit.

CIRCUIT OPERATION

Battery voltage is applied through the GAUGES FUSE 4 to the "BRAKE" Indicator when the Ignition Switch is in the RUN, BULB TEST or START positions. The "BRAKE" Indicator can be lit by having ground applied to it from any of three switches or the Antilock Brake Module.

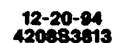
The "BRAKE" Indicator will light whenever the parking brake is engaged. When the parking brake is engaged, ground is supplied through the closed contacts of the Parking Brake Warning Switch to the "BRAKE" Indicator. The "BRAKE" Indicator lights to alert the driver that the parking brake is engaged.

The "BRAKE" Indicator will light when the Ignition Switch is turned from the "LOCK" to the RUN position. This is when the Antilock Brake Module conducts its initial test which entails lighting the "BRAKE" Indicator and the ABS Indicator. The Antilock Brake Module will also light the "BRAKE" Indicator if there is a malfunction

within the Four Wheel Antilock Brake System which is affecting the operation of the base hydraulic braking system.

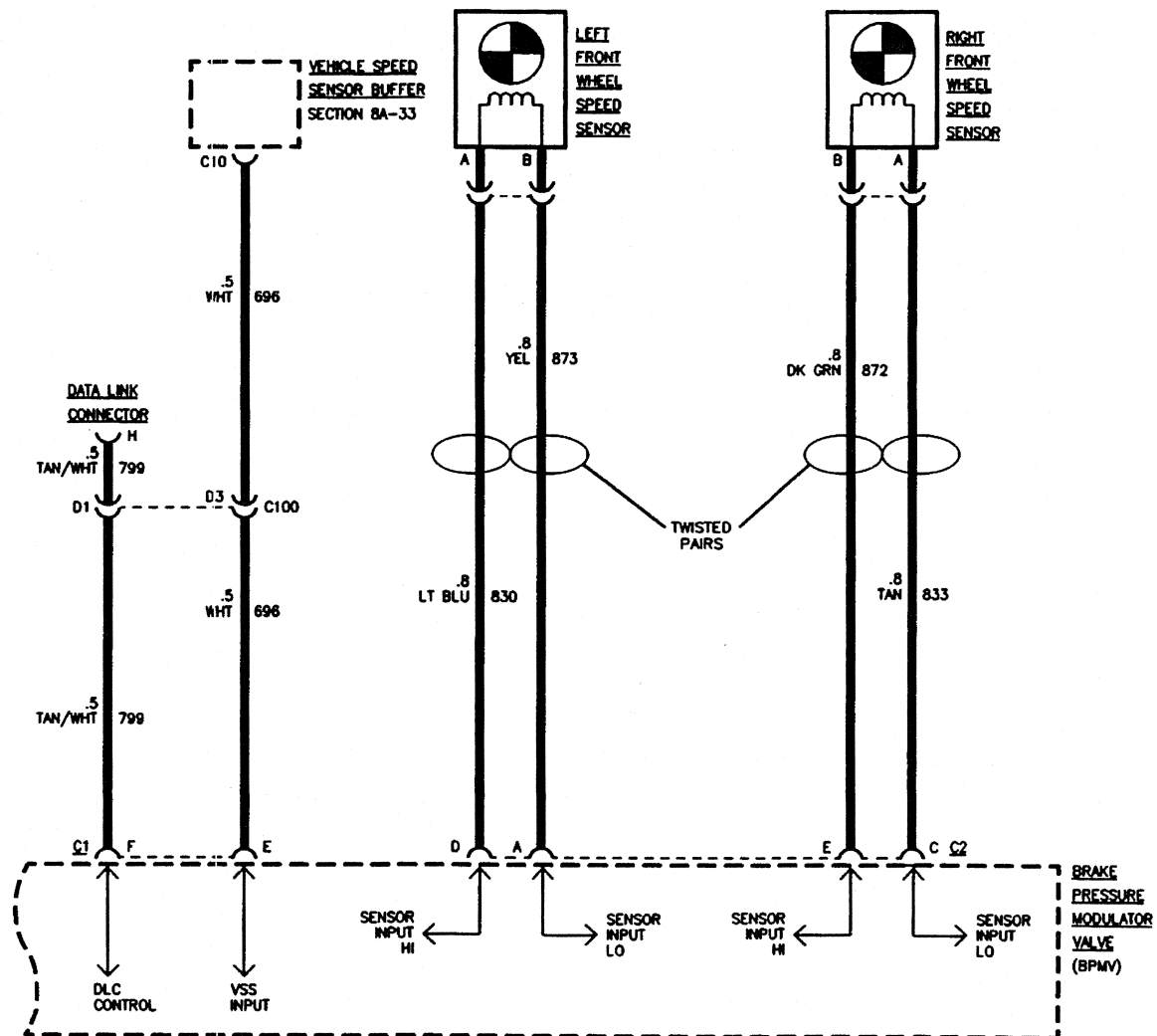
The "BRAKE" Indicator will light if there is low brake fluid pressure in the front or rear brakes. When the Combination Valve senses low brake fluid pressure in the front or rear brakes it closes the Brake Pressure Warning Switch. A ground is supplied through the closed contacts of the Brake Pressure Warning Switch to the "BRAKE" Indicator. With both power and ground applied to the "BRAKE" Indicator, it will light.

If the vehicle is equipped with Daytime Running Lamps (DRL), then there is an Ignition Switch BULB TEST function that will light the "BRAKE" Indicator whenever the Ignition Switch is turned to the BULB TEST position.





SEE PAGE 8A-3-4
FOR MEASURING
AND HANDLING
PROCEDURES



ANTILOCK BRAKES

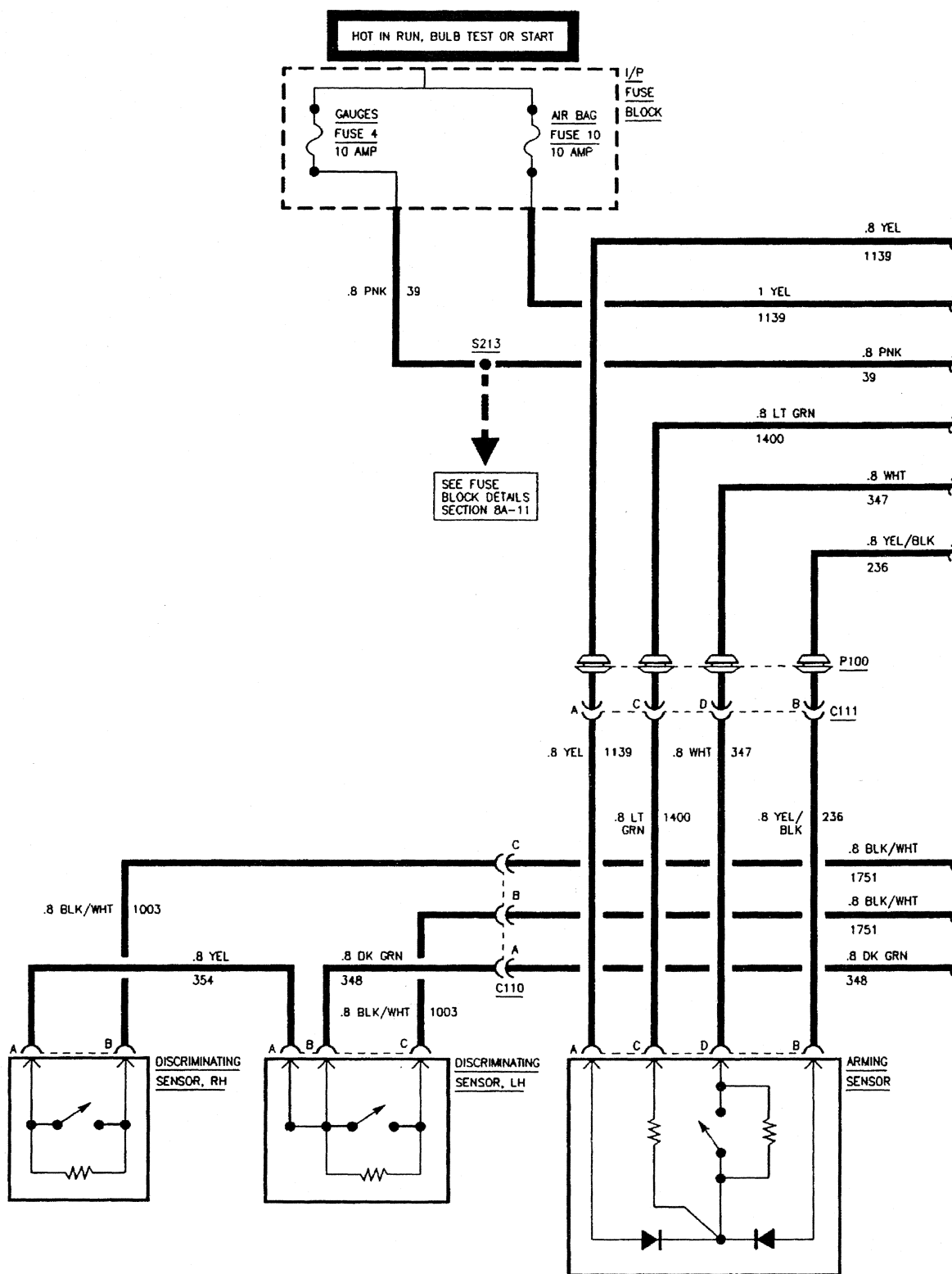
COMPONENT	LOCATION	201-PG	FIG.	CONN
Brake Pressure Modulator Valve (BPMV)	Near brake master cylinder, at LH front wheelhouse	7	10	
Brake Pressure Warning Switch	On rear of Brake Pressure Modulator Valve (BPMV) casting			
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	41	
Data Link Connector (DLC)	Under LH side of I/P	30	36	
I/P Fuse Block	Lower LH side of I/P			
Powertrain Control Module (PCM)	Under RH end of I/P, above blower motor	29	34	
TCC/Stoplamp Switch	Top of brake pedal	34	39	
Underhood Fuse-Relay Center	LH rear of engine compartment, on fender	5	8	
Wheel Sensor, LH Front	At LH front wheel			
Wheel Sensor, RH Front	At RH front wheel			
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C200	Behind RH portion of I/P, near heater motor, in foam wrap ..	28	33	
GROUND:				
G105 (VIN P)	RH top rear of cylinder head	15	18	
GROMMETS:				
P101	RH rear of engine compartment, at bulkhead			
SPLICES:				
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout			
S111 (VIN F)	Engine harness, 20 cm into brake pressure modulator valve breakout			
S111 (VIN P)	Engine harness, 20 cm into brake pressure modulator valve breakout			
S111 (VIN S)	Engine harness, 20 cm into brake pressure modulator valve breakout			
S111 (VIN Z, H, K, N)	Engine harness, approx. 20 cm into brake pressure modulator valve (BPMV) breakout			
S112 (VIN F)	Engine harness, 55 cm into brake pressure modulator valve breakout			
S112 (VIN P)	Engine harness, 52 cm into brake pressure modulator valve breakout			
S112 (VIN S)	Engine harness, 55 cm into brake pressure modulator valve breakout			
S112 (VIN Z, H, K, N)	Engine harness, approx. 53 cm into brake pressure modulator valve (BPMV) breakout			

COMPONENT	LOCATION	201-PG FIG. CONN
S129	Engine harness, approx. 25 cm from auxiliary cooling fan switch connector breakout	
S129 (VIN H, K w/5D5)	Engine harness, approx. 32 cm from auxiliary cooling fan temperature switch	
S129 (VIN K w/5D5).....	Engine harness, approx. 32 cm from auxiliary cooling fan temperature switch	
S129 (VIN N)	Engine harness, approx. 25 cm from auxiliary cooling fan switch	

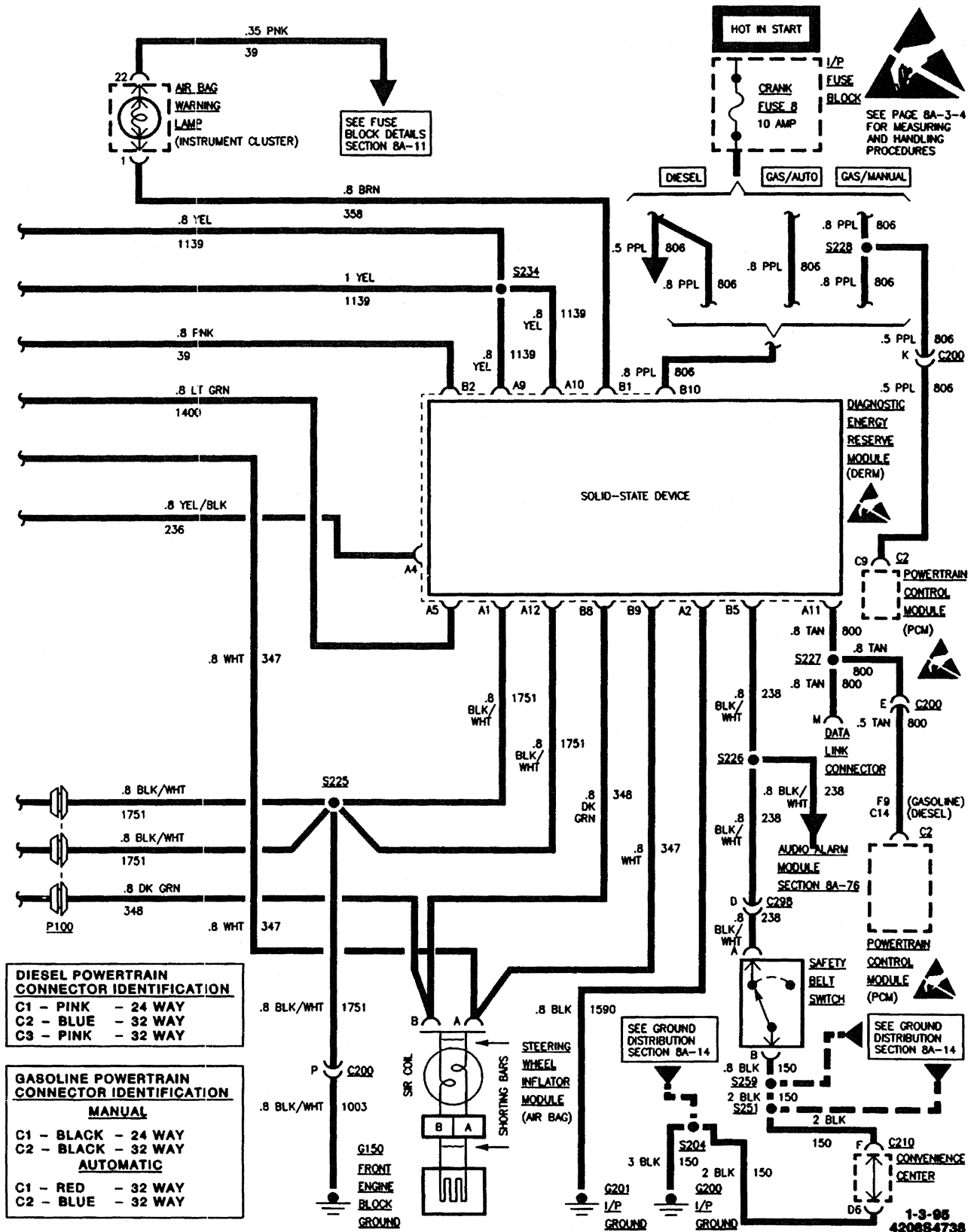
CIRCUIT OPERATION

This manual contains circuit diagrams and component locations only. Circuit operation, diagnosis and repair procedures are contained in service manual Section 5E.

SUPPLEMENTAL INFLATABLE RESTRAINT



SUPPLEMENTAL INFLATABLE RESTRAINT



SUPPLEMENTAL INFLATABLE RESTRAINT

CAUTION: This vehicle is equipped with Supplemental Inflatable Restraint (SIR). Refer to CAUTIONS in Section 9J under "ON-VEHICLE SERVICE" and the SIR Component and Wiring Location view in Section 9J before performing service on or around SIR components or wiring. Failure to follow CAUTIONS could result in possible air bag deployment, personal injury, or otherwise unneeded SIR system repairs.

COMPONENT	LOCATION	201-PG	FIG.	CONN
Arming Sensor.....	Inside LH frame rail, below drivers door			
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead.....	34.....	41	
Diagnostic Energy Reserve				
Module (DERM).....	Behind center of I/P			
Diagnostic Energy Reserve				
Module (DERM) Connector ..	Behind center of I/P			
Discriminating Sensor, LH	Front outside of LH frame rail			
Discriminating Sensor, RH	Front outside of RH frame rail			
Driver Inflator Modue, Air Bag	At top of steering column	34.....	40	
I/P Fuse Block	Lower LH side of I/P			
Instrument Cluster	LH upper end of I/P			
Powertrain Control Module				
(PCM).....	Under RH end of I/P, above blower motor	29.....	34	
Safety Belt Switch	At driver's stationery belt connector	40.....	47	
CONNECTORS:				
C211	Under driver's seat			
C200	Behind RH portion of I/P, near heater motor, in foam wrap..	28.....	33	
C210	At convenience center	27.....	32	
GROMMETS:				
P100	LH rear of engine compartment, at bulkhead			
GROUND:				
G150	On thermostat housing			
G200	Behind LH side of I/P, below fuse block			
G201	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S213	I/P harness approx. 16 cm right of fuse block breakout			
S213 (Diesel)	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout			
S225	I/P harness, approx. 6 cm left of steering column connector breakout			

SUPPLEMENTAL INFLATABLE RESTRAINT

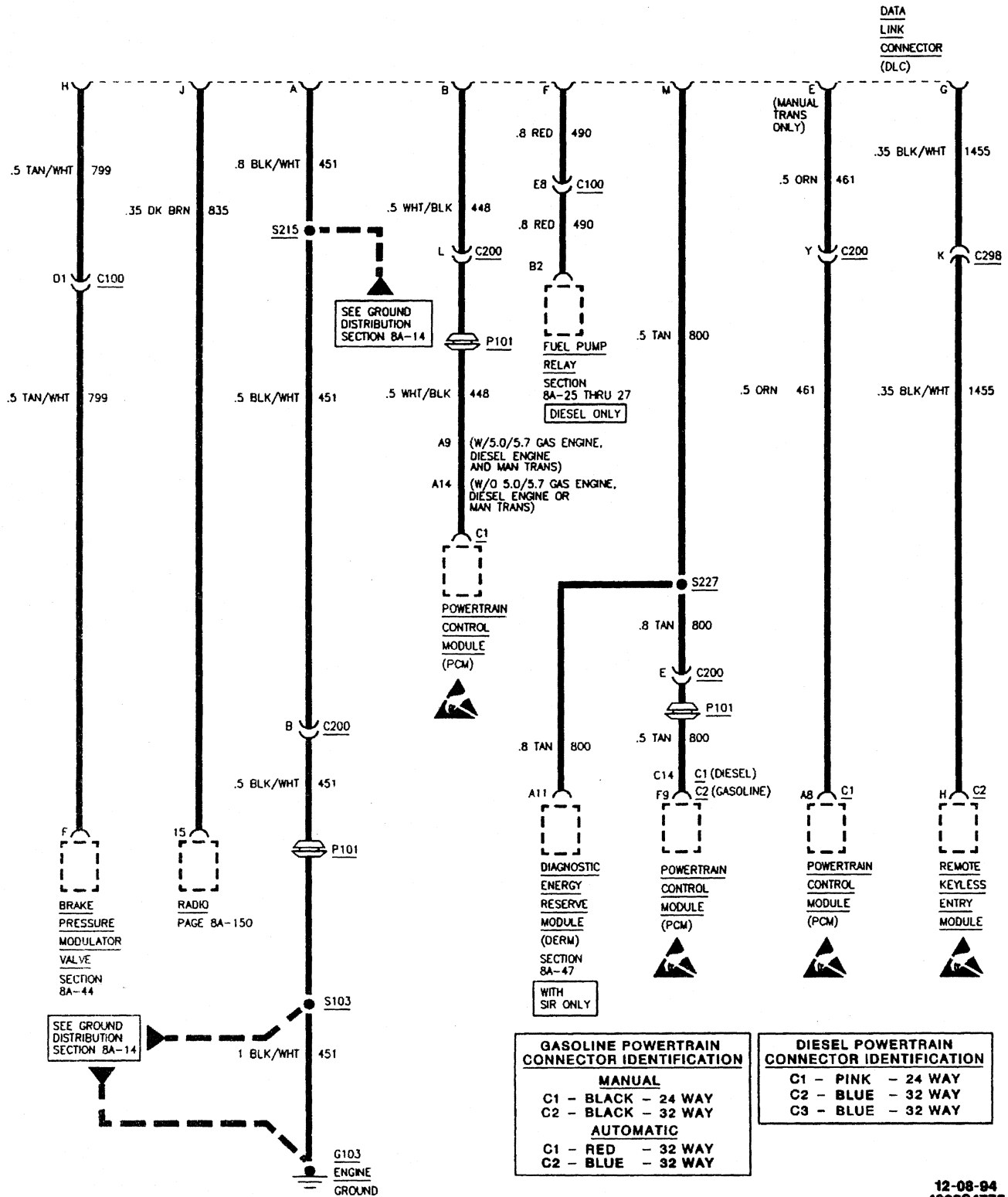
COMPONENT	LOCATION	201-PG FIG. CONN
S226	Approx 41 cm from DERM connector	
S227	I/P harness, approx. 12 cm right of turn signal flasher breakout	
S228	I/P harness, approx. 4 cm left of C200 connector breakout	
S234	I/P harness, approx. 9 cm left of cruise control harness breakout	
S234 (Diesel).....	I/P harness, approx. 10 cm left of breakout for crossbody harness connector C298	
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout	
S259 (Suburban).....	Crossbody harness, 17 cm right of door lock relay breakout	
S259 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 25 cm into LH seat breakout	
S226	Approx 41 cm DERM connector	

CIRCUIT OPERATION

This manual contains circuit diagrams and Component Locations only. Circuit operation, diagnosis and repair procedures are contained in Service Manual Section 9J.

8A - 50 - 0 ELECTRICAL DIAGNOSIS

DATA LINK CONNECTOR (DLC) PIN ASSIGNMENT



COMPONENT	LOCATION	201-PG	FIG.	CONN
Brake Pressure Modulator Valve (BPMV)	Near brake master cylinder, at LH front wheelhouse	7	10	
Data Link Connector (DLC)	Under LH side of I/P	30	36	
Diagnostic Energy Reserve Module (DERM)	Behind center of I/P			
Powertrain Control Module (PCM)	Under RH end of I/P, above blower motor	29	34	
Radio Receiver	Behind center of I/P	35	42	
Remote Keyless Entry Module .	Behind center of I/P			
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C200	Behind RH portion of I/P, near heater motor, in foam wrap..	28	33	
C298	Behind LH side of I/P, near convenience center	27	32	
GROUND:				
G103 (VIN H, K)	LH front of engine near thermostat housing	10	13	
G103 (VIN N)	LH front of engine near thermostat housing	12	15	
GROMMETS:				
P101	RH rear of engine compartment, at bulkhead			
SPLICES:				
S103	Engine harness, approx. 19 cm from ignition coil connector breakout			
S103 (VIN F)	Engine harness, 10 cm from A/C high pressure switch breakout			
S103 (VIN P)	Engine harness, 10 cm from underhood lamp breakout			
S103 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator cable breakout			
S215	I/P harness, approx. 8 cm right of I/P cluster breakout			
S227	I/P harness, approx. 12 cm right of turn signal flasher breakout			

DATA LINK CONNECTOR (DLC) PIN ASSIGNMENT

DIAGNOSIS - DLC PIN ASSIGNMENT

TROUBLESHOOTING HINTS:

1. Check for proper connections of Scan Tool to Data Link Connector (DLC).
 2. Check for loose or missing terminals at DLC.
 3. If all components are not accessible with a Scan Tool, then check for an open in TAN (800) wire between S227 and DLC terminal "M".
 4. If a single component is not accessible with a Scan Tool, then check for an open in TAN (800) wire between S227 and affected component.
- Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
 - Check for proper installation of aftermarket electronic equipment which may affect the integrity of other system (see "Troubleshooting Procedures," SECTION 8A-4).

SCAN TOOL WILL NOT COMMUNICATE WITH COMPONENTS

TEST	RESULT	ACTION
1. Disconnect Scan Tool from vehicle. Obtain vehicle with same systems. Connect Scan Tool to Data Link (DLC). Ignition Switch to "RUN." Attempt to establish communications.	Communications can be established.	GO to Step 2.
	Communications could not be established.	Scan Tool may be malfunctioning. Refer to Scan Tool instruction manual.
2. Reconnect Scan Tool to original vehicle. Ignition Switch to "RUN." Attempt to establish communications with Powertrain Control Module (PCM).	Communications can be established.	GO to Step 8.
	Communications could not be established.	GO to Step 3.
3. Ignition Switch "OFF." Disconnect all modules connected to DLC terminal "M" With a DVM, measure resistance on DLC from terminal "M" to terminal "A" (ground).	Resistance greater than 10M ohms.	GO to Step 4.
	Resistance less than 10M ohms.	LOCATE and REPAIR short to ground in TAN (800) wire.
4. Ignition Switch to "RUN." With a DVM, measure voltage on DLC from terminal "M" to terminal "A" (ground).	Voltage less than 1.0 VDC.	GO to step 5.
	Voltage greater than 1.0 VDC.	Ignition Switch "OFF." LOCATE and REPAIR short to voltage in TAN (800) wire.
5. Ignition Switch "OFF." With a DVM measure resistance from DLC terminal "M" to terminal F9 on the PCM Harness Connector.	Resistance less than 5.0 ohms.	GO to Step 6.
	Resistance greater than 5.0 ohms.	LOCATE and REPAIR open in TAN (800) wire.
6. Reconnect the PCM. Ignition Switch to "RUN." Attempt to establish communications with Powertrain Control Module (PCM).	Communications can be established.	GO to Step 7.
	Communications cannot be established.	Ignition Switch "OFF." Check for proper connection at PCM. If OK, refer to SECTION 3A or 3B for further diagnosis.

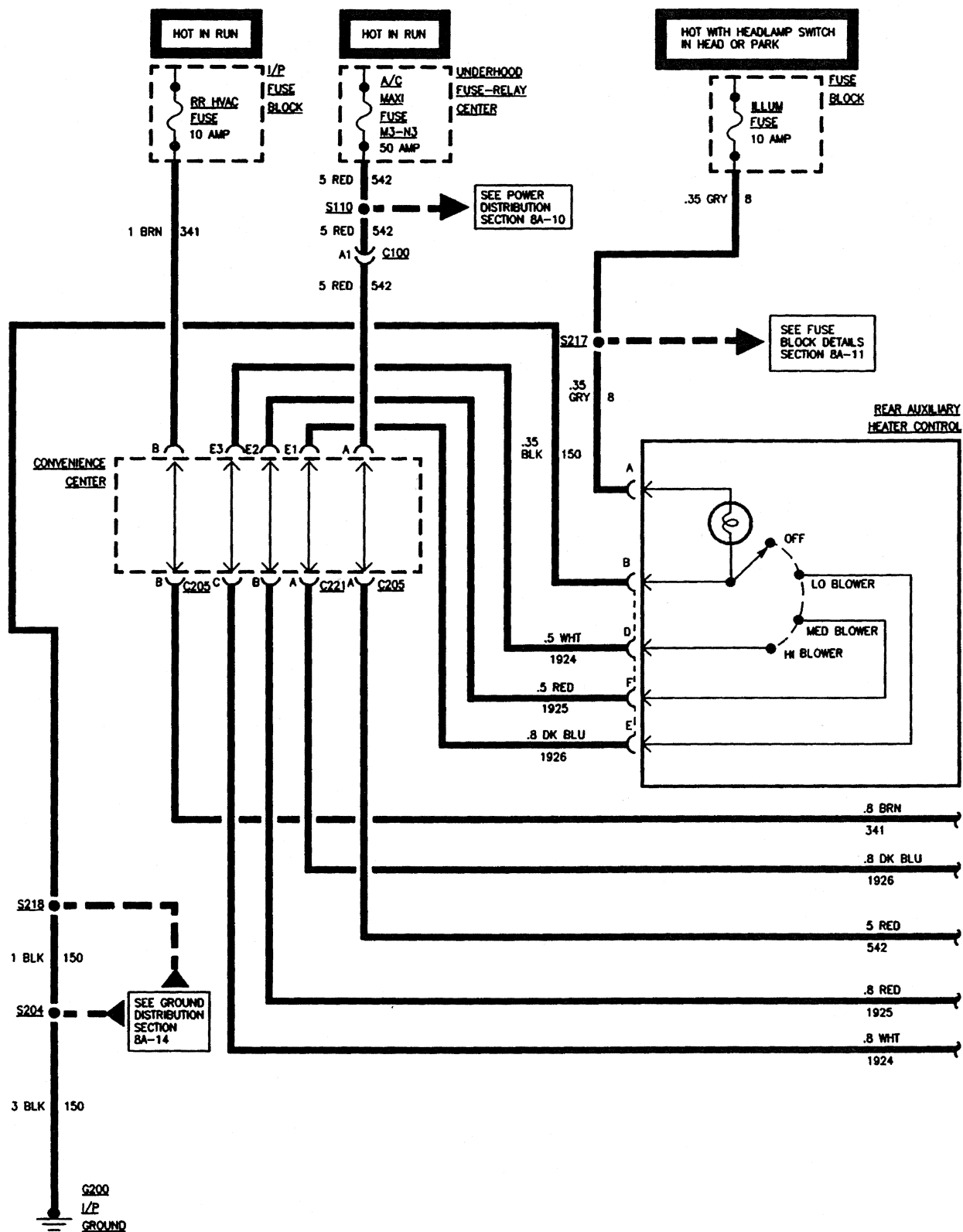
TEST	RESULT	ACTION
7. Ignition Switch "OFF." Reconnect one of the modules which is disconnected. Ignition Switch to "RUN." Attempt to establish communications.	Communications can be established.	Repeat Step 7 until the malfunctioning module is isolated.
	Communications cannot be established.	REPLACE most recently connected module.
8. Ignition Switch "OFF." Disconnect module that will not communicate. With a DVM measure resistance from DLC terminal "M" to Module Harness Connector data line (800) terminal.	Resistance less than 5.0 ohms.	Check for power and ground to module. If OK, REPLACE module.
	Resistance greater than 5.0 ohms.	LOCATE and REPAIR open in TAN (800) wire between module and S227.

CIRCUIT OPERATION

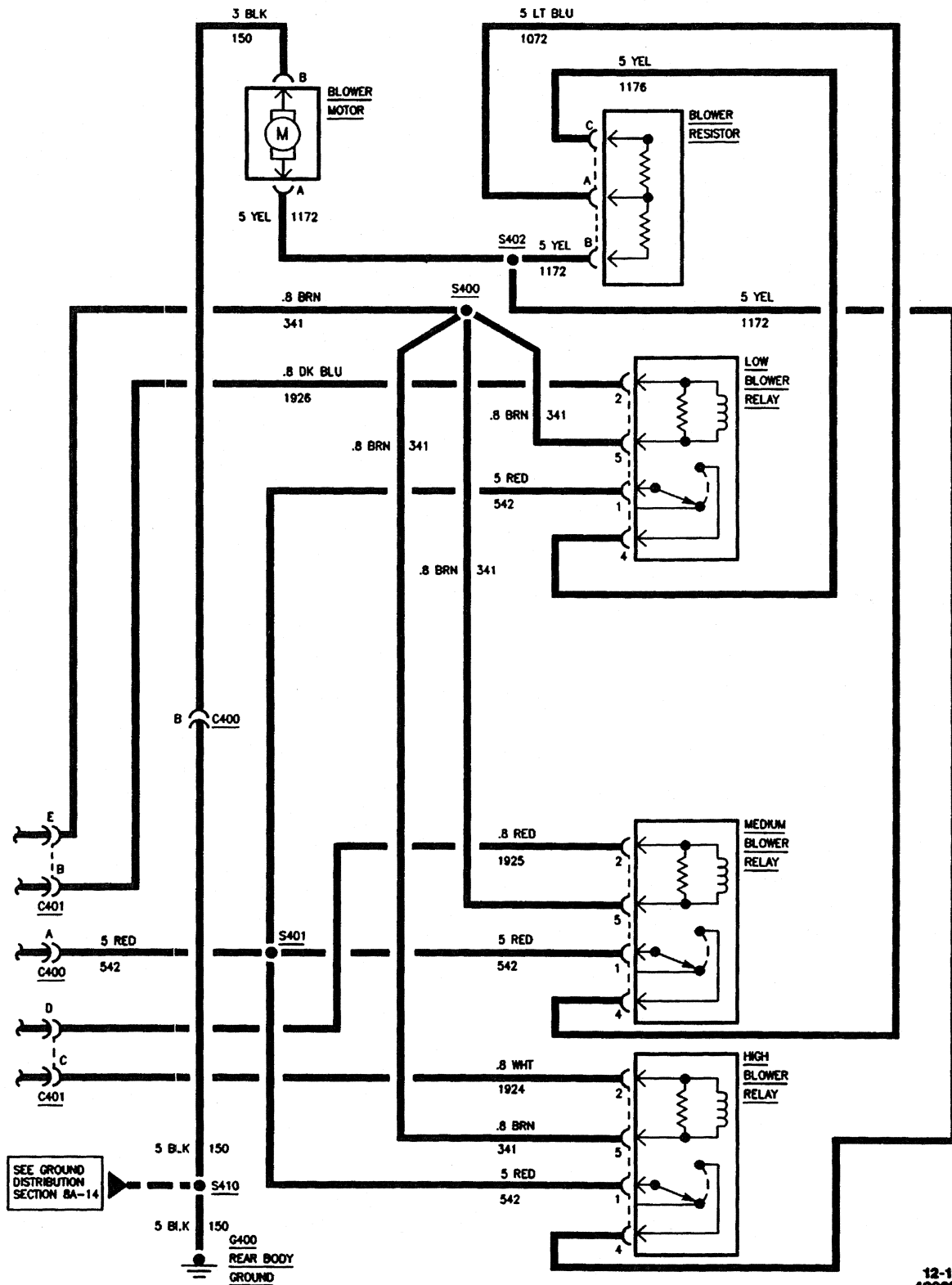
A Scan Tool can be connected to the Data Link Connector (DLC), this allows the Scan Tool to communicate with either the Powertrain Control Module (PCM) or the Diagnostic Energy Reserve Module (DERM). System operations can then be monitored for diagnostic purposes.

There is one data lines access with a Scan Tool. circuit 800 (TAN) data line allows the Powertrain Control Module and the Diagnostic Energy Reserve Module to communicate with each other and/or a Scan Tool.

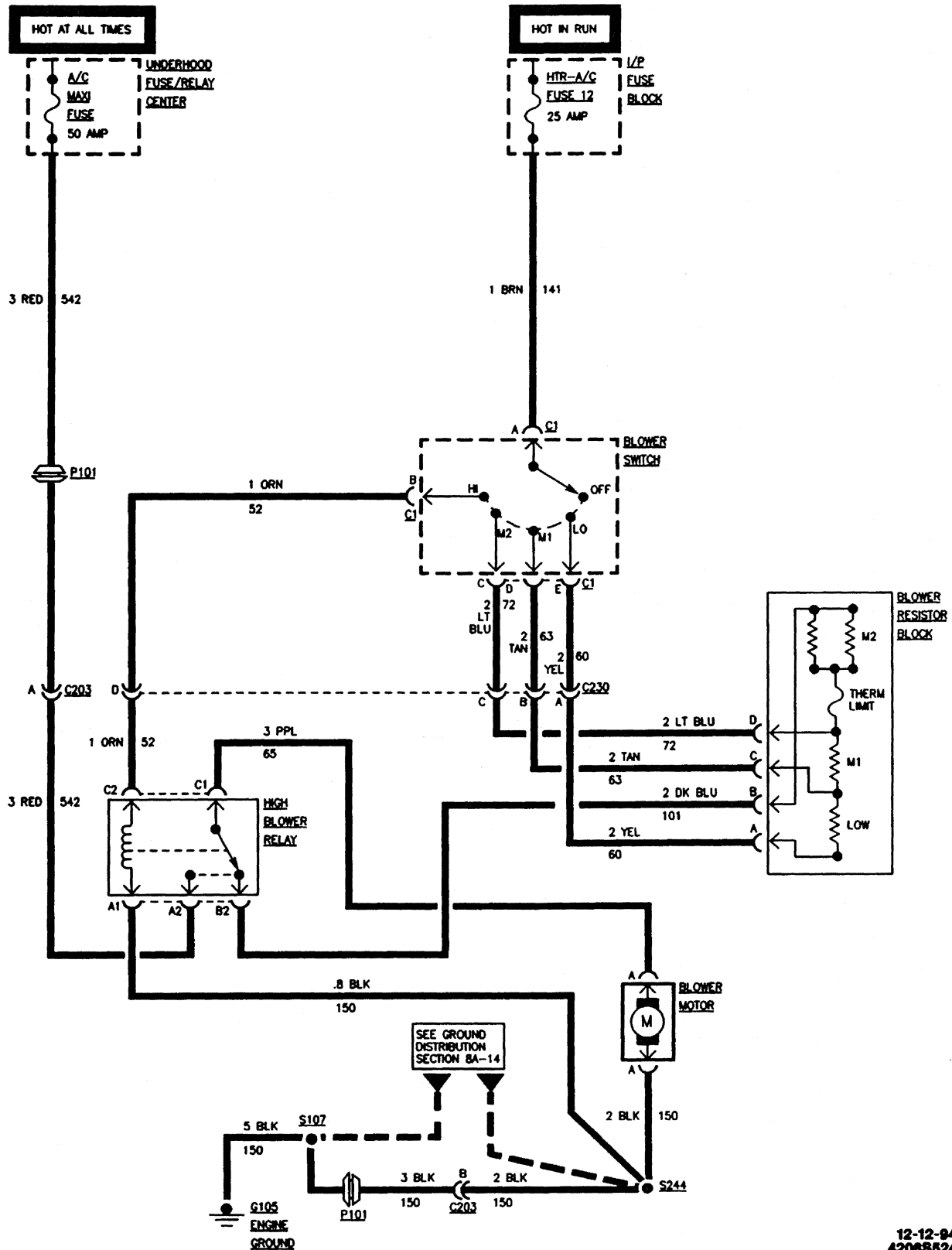
HEATER REAR AUXILIARY



HEATER



HEATER FRONT



HEATER

COMPONENT	LOCATION	201-PG	FIG.	CONN
Blower Motor	Under RH side of I/P	36	43	
Blower Resistor Block	Under RH side of I/P, on HVAC plenum, center area	36	43	
Blower Switch	At heater control			
Cargo Door Defogger Grid, LH Rear	On LH rear cargo door glass			
Cargo Door Defogger Grid, RH Rear	On RH rear cargo door glass	35, 58	44, 71	
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	41	
High Blower Relay	Under I/P, on top of HVAC plenum	36	43	
I/P Fuse Block	Lower LH side of I/P			
Low Blower Relay, Rear	On auxiliary heater and A/C module	47	56	
Medium Blower Relay, Rear	On auxiliary heater and A/C module	47	56	
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C203	Behind RH portion of I/P, near heater motor, in foam wrap ..	28	33	
C205	At convenience center			
C221	At convenience center	34	41	
C230	Behind RH side of I/P, above HVAC evaporator housing	31	37	
C400	RH rear of vehicle, above auxiliary blower motor			
C401	RH rear of vehicle, above auxiliary blower motor			
C492	At LH D-pillar	73	92	
C493	At LH D-pillar	73	92	
C494	In LH D-pillar	74	93	
C495	At RH D-pillar	74	93	
C496	In RH D-pillar			
C497	At RH D-pillar			
GROUND:				
G105 (VIN Z, H, K)	RH front wheelhouse	1	4	
G200	Behind LH side of I/P, below fuse block			
G202	I/P harness, 15 cm from data link connector	32	38	
G400	RH "B" pillar	41	49	

HEATER

COMPONENT	LOCATION	201-PG	FIG.	CONN
GROMMETS:				
P101	RH rear of engine compartment, at bulkhead			
SPLICES:				
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout			
S207	I/P harness, 4 cm from radio breakout	43	.....	55
S208	Behind LH side of I/P	43	.....	55
S110 (VIN H, K, N)	Engine harness, approx. 21 cm from C100			
S110 (VIN P)	Engine harness, 15 cm from generator breakout			
S110 (VIN S)	Engine harness, 29 cm from C100			
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S217	I/P harness, approx. 12 cm right of fuse block breakout			
S217 (Crew Cab, VIN F)	I/P harness approx. 12 cm right of breakout for LH door jamb switch			
S217 (Diesel)	I/P harness, approx. 12 cm right of headlamp dimmer switch breakout			
S218	I/P harness, approx. 4 cm right of turn signal flasher			
S207	I/P harness, 4 cm from radio breakout	43	.....	55
S208	Behind LH side of I/P	43	.....	55
S217	Under LH side of I/P	43	.....	55
S218	I/P harness, approx. 4 cm right of turn signal flasher			
S244	HVAC harness, 4 cm from recirc door breakout			
S259	RH upper side of engine			
S296	Heater harness, near resistor lead			
S400 (Rear A/C)	Rear A/C harness, 17 cm from blower motor relays			
S400 (Rear Heat & A/C)	Rear heat and A/C harness, 7 cm from blower motor relays breakout			
S401 (Rear A/C)	Rear A/C harness, 23 cm from blower motor relays			
S401 (Rear Heat & A/C)	Rear heat and A/C harness, 13 cm from blower motor relays breakout			
S402 (Rear A/C)	Rear A/C harness, 7 cm from blower motor resistor breakout			
S402 (Rear Heat & A/C)	Rear heat and A/C harness, 7 cm from blower motor resistor breakout			
S410 (2-Door Utility)	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			

HEATER

COMPONENT	LOCATION	201-PG	FIG.	CONN
S410 (4-Door Utility)	Front to rear lamps harness, 22 cm from RH rear door speaker breakout			
S410 (Suburban).....	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			
S434	Auxiliary A/C harness, near relay leads.....	67	.....	84
S435	Auxiliary A/C harness, near relay leads.....	67	.....	84
S436	Auxiliary heater-A/C harness, hear blower motor	67	.....	84

DIAGNOSIS - HEATER**TROUBLESHOOTING HINTS:**

- Check that either the A/C MAXI FUSE or the HTR A/C FUSE 12 is not open . If either fuse is open, LOCATE and REPAIR source of overload and REPLACE the fuse(s).
- Check that ground G105 is clean and tight.
- Check that High Blower Relay is properly mated to its connector:
- Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
- Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

BLOWER MOTOR DOES NOT OPERATE AT ANY SPEED

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Backprobe Blower Switch Connector C1 with a test lamp from cavity "A" to ground.	Test lamp does not light.	LOCATE and REPAIR open in BRN (141) wire between Blower Switch and I/P Fuse Block.
	Test lamp lights.	GO TO step 2.
2. Turn Blower Switch to HI. Backprobe Blower Switch Connector with a test lamp from cavity "B" to ground.	Test lamp does not light.	REPLACE Blower Switch.
	Test lamp lights.	GO TO step 3.
3. Backprobe Blower Motor Connector with a digital multimeter from BLK (150) wire to B+. Measure voltage.	Less than 10.0 volts.	LOCATE and REPAIR open in BLK (150) wire between Blower Motor and G105.
	More than 10.0 volts.	GO TO step 4.
4. Disconnect Blower Motor Connector. Connect a digital multimeter from Blower Motor Connector PPL (65) wire to BLK (150) wire. Measure voltage.	More than 10.0 volts.	REPLACE Blower Motor.
	Less than 10.0 volts.	GO TO step 5.

8A - 60 - 6 ELECTRICAL DIAGNOSIS**HEATER**

TEST	RESULT	ACTION
5. Backprobe High Blower Relay Connector with a digital multimeter from cavity "C1" to ground. Measure voltage.	More than 10.0 volts.	LOCATE and REPAIR open in PPL (65) wire between High Blower Relay and Blower Motor.
	Less than 10.0 volts.	REPLACE High Blower Relay.

BLOWER MOTOR DOES NOT OPERATE IN HI

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Turn Blower Switch to HI position. Backprobe High Blower Relay Connector with a test lamp from cavity "C2" to ground.	Test lamp does not light.	Check for an open in ORN (52) wire between Blower Switch and High Blower Relay. If OK, REPLACE Blower Switch.
	Test lamp lights.	GO TO step 2.
2. Backprobe High Blower Relay Connector with a test lamp from cavity "A1" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between S244 and High Blower Relay.
	Test lamp lights.	GO TO step 3.
3. Backprobe High Blower Relay Connector with a test lamp from cavity "A2" to ground.	Test lamp does not light.	LOCATE and REPAIR open in RED (542) wire between Underhood Fuse/Relay Center and High Blower Relay.
	Test lamp lights.	REPLACE High Blower Relay.

BLOWER MOTOR DOES NOT OPERATE IN LO, M1 OR M2

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Turn Blower Switch slowly from OFF to LO, to M1 and then to M2. Notice when the Blower Motor is operational.	Blower Motor does not operate in LO, M1 or M2.	GO TO step 2.
	Blower Motor does not operate in LO.	GO TO step 4.
	Blower Motor does not operate in M1.	GO TO step 5.
	Blower Motor does not operate in M2.	GO TO step 6.
2. Turn Blower Switch to LO position. Backprobe Blower Switch Connector C1 with a test lamp from cavity "E" to ground.	Test lamp does not light.	GO TO step 3.
	Test lamp lights.	REPLACE Blower Switch.
3. Disconnect High Blower Relay Connector. Connect a fused jumper from High Blower Relay Connector cavity "B2" to "C1".	Blower Motor runs at LO speed.	REPLACE High Blower Relay.
	Blower Motor does not operate.	Check for an open in DK BLU (701) wire between High Blower Relay and Blower Resistor Block. If OK, REPLACE Blower Resistor Block.
4. Turn Blower Switch to LO position. Backprobe Blower Switch Connector C1 with a test lamp from cavity "E" to ground.	Test lamp does not light.	REPLACE Blower Switch.
	Test lamp lights.	Check for an open in YEL (60) wire between Blower Switch and Blower Resistor Block. If OK, REPLACE Blower Resistor Block.

HEATER

TEST	RESULT	ACTION
5. Turn Blower Switch to M1 position. Backprobe Blower Switch Connector C1 with a test lamp from cavity "D" to ground.	Test lamp does not light.	REPLACE Blower Switch.
	Test lamp lights.	Check for an open in TAN (63) wire between Blower Switch and Blower Resistor Block. If OK, REPLACE Blower Resistor Block.
6. Turn Blower Switch to M2 position. Backprobe Blower Switch Connector C1 with a test lamp from cavity "C" to ground.	Test lamp does not light.	REPLACE Blower Switch.
	Test lamp lights.	Check for an open in LT BLU (72) wire between Blower Switch and Blower Resistor Block. If OK, REPLACE Blower Resistor Block.

BLOWER MOTOR RUNS CONTINUOUSLY WITH BLOWER SWITCH OFF

TEST	RESULT	ACTION
1. Disconnect High Blower Relay Connector.	Blower Motor continues to operate.	LOCATE and REPAIR short to voltage in PPL (65) wire between High Blower Relay and Bower Motor.
	Blower Motor stops.	GO TO step 2.
2. Connect a test lamp from High Blower Relay Connector cavity "C2" to ground.	Test lamp lights.	Check for a short to voltage in ORN (52) wire between Blower Switch and High Blower Relay. If OK, REPLACE Blower Switch.
	Test lamp does not light.	GO TO step 3.
3. Connect a test lamp from High Blower Relay Connector cavity "B2" to ground.	Test lamp does not light.	REPLACE High Blower Relay.
	Test lamp lights.	GO TO step 4.
4. Disconnect Blower Resistor Block Connector. Connect a test lamp from Blower Resistor Block Connector cavity "A" to ground.	Test lamp lights.	Check for a short to voltage in YEL (60) wire between Blower Switch and Blower Resistor Block. If OK, REPLACE Blower Switch.
	Test lamp does not light.	GO TO step 5.
5. Connect a test lamp from Blower Resistor Block Connector cavity "C" to ground.	Test lamp lights.	Check for a short to voltage in TAN (63) wire between Blower Switch and Blower Resistor Block. If OK, REPLACE Blower Switch.
	Test lamp does not light.	Check for a short to voltage in LT BLU (72) wire between Blower Switch and Blower Resistor Block. If OK, REPLACE Blower Switch.

HEATER**DIAGNOSIS - REAR AUXILIARY HEATER****TROUBLESHOOTING HINTS:**

- Make sure that RR HVAC FUSE, A/C MAXI FUSE or ILLUM FUSE 14 are not open. If any fuse(s) is open, then LOCATE and REPAIR source of overload and REPLACE fuse(s).
- Check that grounds G200 and G105 are clean and tight.
- Check that all of the relays are properly mated to their connectors:
- Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
- Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

REAR BLOWER MOTOR DOES NOT OPERATE IN HI

TEST	RESULT	ACTION
1. Place Ignition Switch in RUN and Rear Auxiliary Heater Control Switch to HI. Connect test lamp from BRN (341) wire at HIGH Blower Relay Connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (341) wire between HIGH Blower Relay Connector and splice S400.
2. Connect test lamp from WHT (1924) wire to BRN (341) wire at HIGH Blower Relay Connector.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	LOCATE and REPAIR open in WHT (1924) wire between HIGH Blower Relay Connector and Rear Auxiliary Heater Control Connector. If wire is good, REPLACE Rear Auxiliary Heater Control switch.
3. Connect test lamp from RED (542) wire at HIGH Blower Relay Connector to ground.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	LOCATE and REPAIR open in RED (542) wire between HIGH Relay Connector and splice S401.
4. Check for continuity in YEL (1172) wire between HIGH Blower Relay Connector and Blower motor Connector.	No continuity.	LOCATE and REPAIR open in YEL (1172) wire between HIGH Blower Relay Connector and Blower motor Connector.
	Continuity.	REPLACE HIGH Blower Relay.

REAR BLOWER MOTOR DOES NOT OPERATE AT ANY SPEED

TEST	RESULT	ACTION
1. Place Ignition Switch in RUN. Connect test lamp from BRN (341) wire at HIGH Blower Relay to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (341) wire between HIGH Blower Relay and I/P Fuse Block.
2. Connect test lamp from RED (542) wire at HIGH Blower Relay to ground.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	LOCATE and REPAIR open in RED (542) wire between HIGH Blower Relay and underhood Fuse-Relay Center.

HEATER

TEST	RESULT	ACTION
3. Check for continuity in YEL (1172) wire between HIGH Blower Relay Connector and Blower Motor Connector.	Continuity.	GO to step 4.
	No continuity.	LOCATE and REPAIR open in YEL (1172) wire between HIGH Blower Relay Connector and Blower Motor Connector.
4. Check for continuity of BLK (150) wire between Blower motor Connector and ground.	Continuity.	GO to step 5.
	No continuity.	LOCATE and REPAIR open in BLK (150) wire between Blower Motor Connector and ground.
5. Check for continuity of BLK (150) wire between Rear Auxiliary Heater Control Switch Connector and ground.	Continuity.	GO to step 6.
	No continuity.	LOCATE and REPAIR open in BLK (150) wire between Rear Auxiliary Heater Control Switch Connector and ground.
6. Place Rear Auxiliary Heater Control Switch in HI and check for continuity between terminals "A" (BLK wire) and "D" (WHT wire).	Continuity.	REPLACE Blower Motor.
	No continuity.	REPLACE Rear Auxiliary Heater Control Switch.

REAR BLOWER MOTOR DOES NOT OPERATE IN MED

TEST	RESULT	ACTION
1. Place Ignition Switch in RUN and Rear Auxiliary Heater Control Switch to MED. Connect test lamp from BRN (341) wire at MEDIUM Blower Relay Connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (341) wire between MEDIUM Blower Relay Connector and splice S400.
2. Connect test lamp from RED (1925) wire to BRN (341) wire at MEDIUM Blower Relay Connector.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	LOCATE and REPAIR open in RED (1925) wire between MEDIUM Blower Relay Connector and Rear Auxiliary Heater Control Connector. If wire is good, REPLACE Rear Auxiliary Heater Control Switch.
3. Connect test lamp from RED (542) wire at MEDIUM Blower Relay Connector to ground.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	LOCATE and REPAIR open in RED (542) wire between MEDIUM Blower Relay Connector and splice S401.
4. Connect test lamp from LT BLU (1072) wire at MEDIUM Blower Relay Connector to ground.	Test lamp lights.	LOCATE and REPAIR open in LT BLU (1072) wire between MEDIUM Blower Relay Connector and Blower Resistor Connector. If wiring is good, REPLACE Blower Resistor.
	Test lamp does not light.	REPLACE MEDIUM Blower Relay.

HEATER**REAR BLOWER MOTOR DOES NOT OPERATE IN LO**

TEST	RESULT	ACTION
1. Place Ignition Switch in RUN and Rear Auxiliary Heater Control Switch to LOW. Connect test lamp from BRN (341) wire at LO Blower Relay Connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (341) wire between LOW Blower Relay Connector and splice S400.
2. Connect test lamp from DK BLU (1926) wire to BRN (341) wire at LOW Blower Relay Connector.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	LOCATE and REPAIR open in DK BLU (1926) wire between LOW Blower Relay Connector and Rear Auxiliary Heater Control Connector. If wire is good, REPLACE Rear Auxiliary Heater Control Switch.
3. Connect test lamp from RED (542) wire at LOW Blower Relay Connector to ground.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	LOCATE and REPAIR open in RED (542) wire between LOW Blower Relay Connector and splice S401.
4. Connect test lamp from YEL (1176) wire at LOW Blower Relay Connector to ground.	Test lamp lights.	LOCATE and REPAIR open in YEL (1176) wire between LOW Blower Relay Connector and Blower Resistor Connector. If wiring is good, REPLACE Blower Resistor.
	Test lamp does not light.	REPLACE LOW Blower Relay.

REAR BLOWER MOTOR RUNS CONTINUOUSLY WITH REAR AUXILIARY CONTROL SWITCH OFF

TEST	RESULT	ACTION
1. Disconnect Blower Resistor.	Rear Blower Motor stops.	GO TO step 4.
	Rear Blower Motor continues to operate.	GO TO step 2.
2. Disconnect High Blower Relay Connector.	Rear Blower Motor continues to operate.	LOCATE and REPAIR short to voltage in YEL (1172) wire between High Blower Relay, Rear Blower Motor and Blower Resistor.
	Rear Blower Motor stops.	GO TO step 3.
3. Connect a test lamp from High Blower Relay Connector cavity "2" to B+.	Test lamp lights.	Check for a short to ground in WHT (1924) wire between High Blower Relay and Rear Auxiliary Heater Control Switch. If OK, REPLACE Rear Auxiliary Heater Control Switch.
	Test lamp does not light.	REPLACE High Blower Relay.
4. Connect a test lamp from Blower Resistor Connector cavity "C" to ground.	Test lamp does not light.	GO TO step 5.
	Test lamp lights.	GO TO step 7.
5. Reconnect Blower Resistor Connector. Disconnect Low Blower Relay Connector.	Rear Blower Motor continues to operate.	LOCATE and REPAIR short to voltage in YEL (1176) wire between Low Blower Relay and Blower Resistor.
	Rear Blower Motor stops.	GO TO step 6.

HEATER

TEST	RESULT	ACTION
6. Connect a test lamp from Low Blower Relay Connector cavity "2" to B+.	Test lamp lights.	Check for a short to ground in DK BLU (1926) wire between Low Blower Relay and Rear Auxiliary Heater Control Switch. If OK, REPLACE Rear Auxiliary Heater Control Switch.
	Test lamp does not light.	REPLACE Low Blower Relay.
7. Reconnect Blower Resistor Connector. Disconnect Medium Blower Relay Connector.	Rear Blower Motor continues to operate.	LOCATE and REPAIR short to voltage in LT BLU (1072) wire between Blower Resistor and Medium Blower Relay.
	Rear Blower Motor stops.	GO TO step 8.
8. Connect a test lamp from Medium Blower Relay Connector cavity "2" to B+.	Test lamp lights.	Check for a short to ground in RED (1925) wire between Rear Auxiliary Heater Control Switch and Medium Blower Relay. If OK, REPLACE Rear Auxiliary Heater Control Switch.
	Test lamp does not light.	REPLACE Medium Blower Relay.

CIRCUIT OPERATION**HEATER**

The Blower Motor delivers air to the interior of the vehicle. Its speed is controlled by the Blower Switch and the Blower Resistors. When the Ignition Switch is in RUN, battery voltage is supplied to the Blower Switch. With the Blower Switch in LO, voltage is supplied across all three Blower Resistors and the Blower Motor. The Blower Motor runs at its slowest speed. With the Blower Switch in MED1, one of the three Blower Resistors is bypassed and the Blower Motor runs faster. With the Blower Switch in MED2, two of the three Blower Resistors are bypassed and the Blower Motor runs faster yet. When the Blower Switch is set to HI, battery voltage is supplied directly to the Blower Motor and the Blower Motor runs at its fastest speed.

REAR AUXILIARY HEATER

The Rear Auxiliary Heater Module operates independently from the vehicle front heater except that both systems receive their hot water supply from the engine cooling system.

"L" OPERATION

When the Ignition Switch is in the RUN position, voltage is applied through RR HVAC FUSE to the coil (power side) of the Low Blower Relay. When the Rear Auxiliary Heater Control Switch is turned to the "LO" position, ground is supplied from G200 through the closed contacts of the Rear Auxiliary Heater Control Switch to the coil (ground side) of the Low Blower Relay. With both power and ground applied to the coil of the Low Blower

Relay, it energizes and its contacts close. Voltage is applied through the A/C MAXI FUSE and the closed contacts of the Low Blower Relay to the Blower Resistor. Voltage is applied across both of the resistors in the Blower Resistor, thus lowering the voltage potential at the Rear Blower Motor. Since the Rear Blower Motor is grounded at G400, it will operate at approximately one third of full speed operation.

"MED" OPERATION

When the Ignition Switch is in the RUN position, voltage is applied through RR HVAC FUSE to the coil (power side) of the Medium Blower Relay. When the Rear Auxiliary Heater Control Switch is turned to the "MED" position, ground is supplied from G200 through the closed contacts of the Rear Auxiliary Heater Control Switch to the coil (ground side) of the Medium Blower Relay. With both power and ground applied to the coil of the Medium Blower Relay, it energizes and its contacts close. Voltage is applied through the A/C MAXI FUSE and the closed contacts of the Medium Blower Relay to the Blower Resistor. Voltage is applied across one of the resistors in the Blower Resistor to the Rear Blower Motor. Since a lesser amount of voltage is lost at the Blower Resistor, the voltage potential at the Rear Blower Motor is higher than that of the low speed operation. Therefore, the Rear Blower Motor will operate at approximately two thirds of full speed operation.

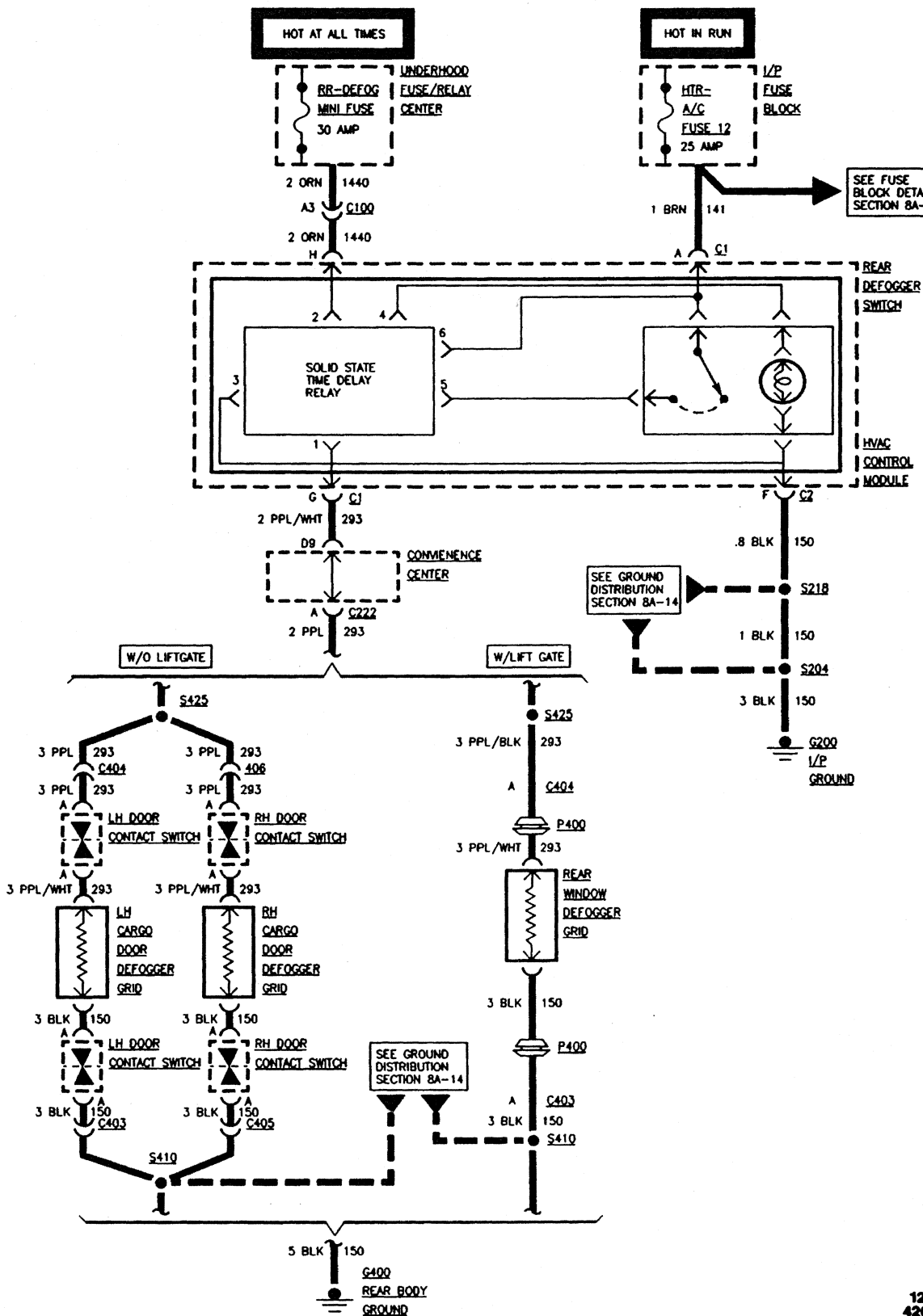
HEATER

“HI” OPERATION

When the Ignition Switch is in the RUN position, voltage is applied through RR HVAC FUSE to the coil (power side) of the High Blower Relay. When the Rear Auxiliary Heater Control Switch is turned to the “HI” position, ground is supplied from G200 through the closed contacts of the Rear Auxiliary Heater Control Switch to the coil (ground side) of the High Blower Relay. With both power and ground applied to the coil of the High Blower Relay, it energizes and its contacts close. Voltage is applied through the A/C MAXI FUSE and the closed contacts of the High Blower Relay to the Rear Blower Motor. Full system voltage is applied to the Rear Blower Motor. Since the Rear Blower Motor is grounded at G400, the Rear Blower Motor will operate at full speed.

BLANK

DEFOGGER



DEFOGGER

COMPONENT	LOCATION	201-PG	FIG.	CONN
Cargo Door Defogger Grid, LH Rear	On LH rear cargo door glass			
Cargo Door Defogger Grid, RH Rear	On RH rear cargo door glass			
Contact Switch, LH Cargo Door.....	Upper LH rear body opening and door.....	57	69	
Contact Switch, RH Cargo Door.....	Upper RH rear body opening and door	58	70	
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	41	
Fuse Block.....	Lower LH side of I/P	26	31	
HVAC Controls Connector.....	Center of I/P			
I/P Fuse Block.....	Lower LH side of I/P			
Rear Window Defogger Switch	LH side of I/P			
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5	8	
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C222	At convenience center	34	41	
C403 w/lift gate	RH "D" pillar, top			
C404 w/lift gate	RH "D" pillar, top			
C404 w/cargo doors.....	LH "D" pillar, top			
C405	LH "D" pillar, top			
C406	LH "D" pillar, top.....	51	62	
GROMMETS:				
P400	Top rear of body, at RH lift gate hinge			
GROUND:				
G200.....	Behind LH side of I/P, below fuse block			
G400.....	RH "B" pillar	41	49	
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S218	I/P harness, approx. 4 cm right of turn signal flasher			
S410 (2-Door Utility)	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			
S410 (4-Door Utility)	Front to rear lamps harness, 22 cm from RH rear door speaker breakout			
S410 (Suburban).....	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			
S425	I/P harness, approx. 6 cm left of steering column connector breakout			

DEFOGGER

DIAGNOSIS - REAR WINDOW DEFOGGER

TROUBLESHOOTING HINTS:

1. Check to see that REAR DEFOG and HTR A/C Fuses are not open. If open, LOCATE and REPAIR source of overload, then REPLACE fuse(s).
2. Check that grounds G200 and G400 are clean and tight.
3. Check that Rear Defogger Grid(s) is continuous and free from damage. Refer to SECTION 10A3.
4. If vehicle is not equipped with a liftgate, then check that LH/RH Door Contact Switch contacts are clean and free from obstructions.

Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load). Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

ON INDICATOR WORKS BUT REAR WINDOW DEFOGGER DOES NOT DEFROST

TEST	RESULT	ACTION
1. Place Ignition Switch in RUN and turn rear defogger switch ON. Connect test lamp from ORN (1440) wire at Rear defogger switch to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (1440) wire between rear defogger switch connector and Underhood Fuse/Relay Center.
2. Connect test lamp from PPL/WHT (293) wire at rear defogger switch to ground.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	REPLACE Rear Defogger Switch.
3. Check for continuity of PPL/WHT (293) wire between Rear Defogger Switch connector and Defogger Grid connector(s).	Continuity.	GO to step 4.
	No continuity.	LOCATE and REPAIR open in PPL/WHT (293) wire between Rear Defogger Switch connector and Rear Defogger Grid(s). If problem persists and vehicle is not equipped with a liftgate, then check for continuity between LH/RH Door Contact Switches
4. Check for continuity of BLK (150) wire between Rear Defogger Grid(s) and G400.	Continuity.	Repair defogger grid(s) as required.
	No continuity.	LOCATE and REPAIR open in BLK (150) wire between Rear Defogger Grid(s) and ground G400. If problem persists and vehicle is not equipped with a liftgate, then check for continuity between LH/RH Door Contact Switches

DEFOGGER**REAR WINDOW DEFOGGER DOES NOT WORK AND ON INDICATOR DOES NOT LIGHT**

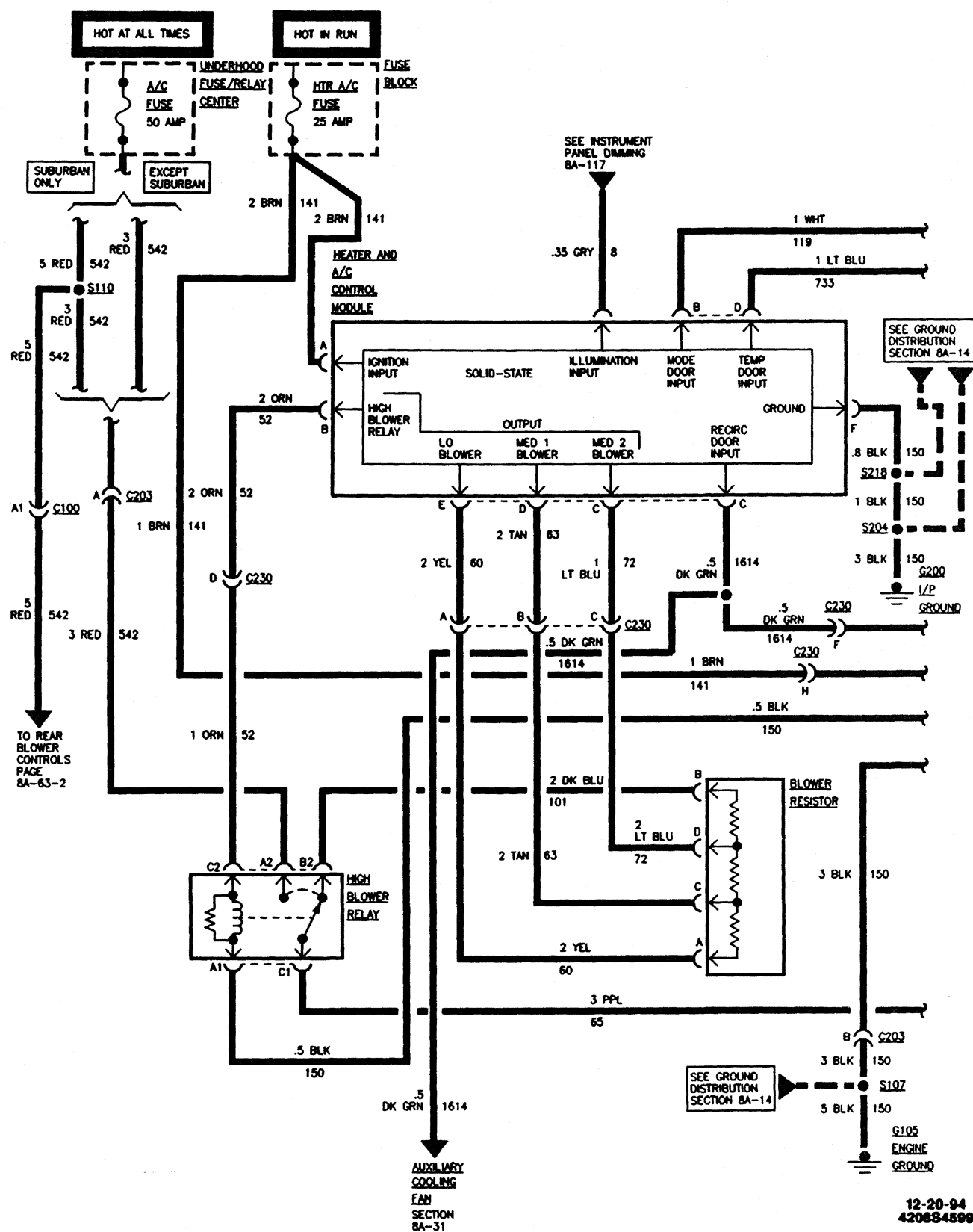
TEST	RESULT	ACTION
1. Disconnect Rear Defogger Switch Connector and place Ignition Switch in RUN position. Connect test lamp from ORN (1440) wire at Rear Defogger Switch Connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (1440) wire between Rear Defogger Switch Connector and Underhood Fuse-Relay Center.
2. Connect test lamp from BRN (141) wire at Rear Defogger Switch connector and ground.	Test lamp lights.	Check for an open in BLK(150) wire between Rear Defogger Switch and G200. If OK, REPLACE Rear Defogger Switch.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (141) wire between Rear Defogger Switch Connector and Fuse Block.

CIRCUIT OPERATION

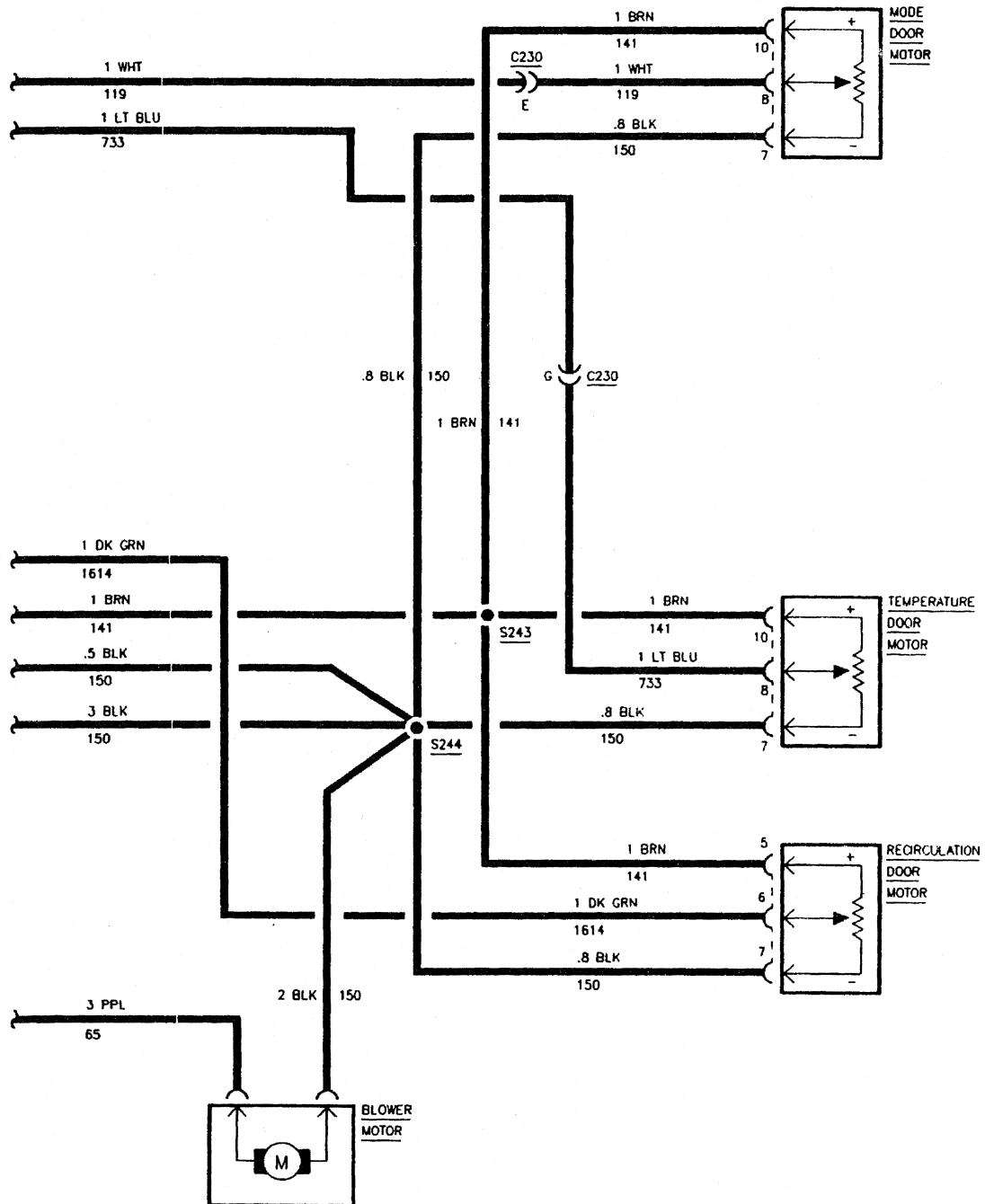
With the Ignition Switch in RUN, voltage is supplied to the Rear Defogger Switch. When the Rear Defogger Switch is moved to the ON position, the contact closes, which provides voltage to the ON Indicator and the Rear Defogger. The rear window will become warm to remove fog from the surface of the window.

The contact in the Rear Defogger Switch will remain closed until the Rear Defogger Switch is turned OFF or the timer cycle is complete.

The Timer also shuts OFF anytime the Rear Defogger Control ON-OFF Switch is depressed to OFF.

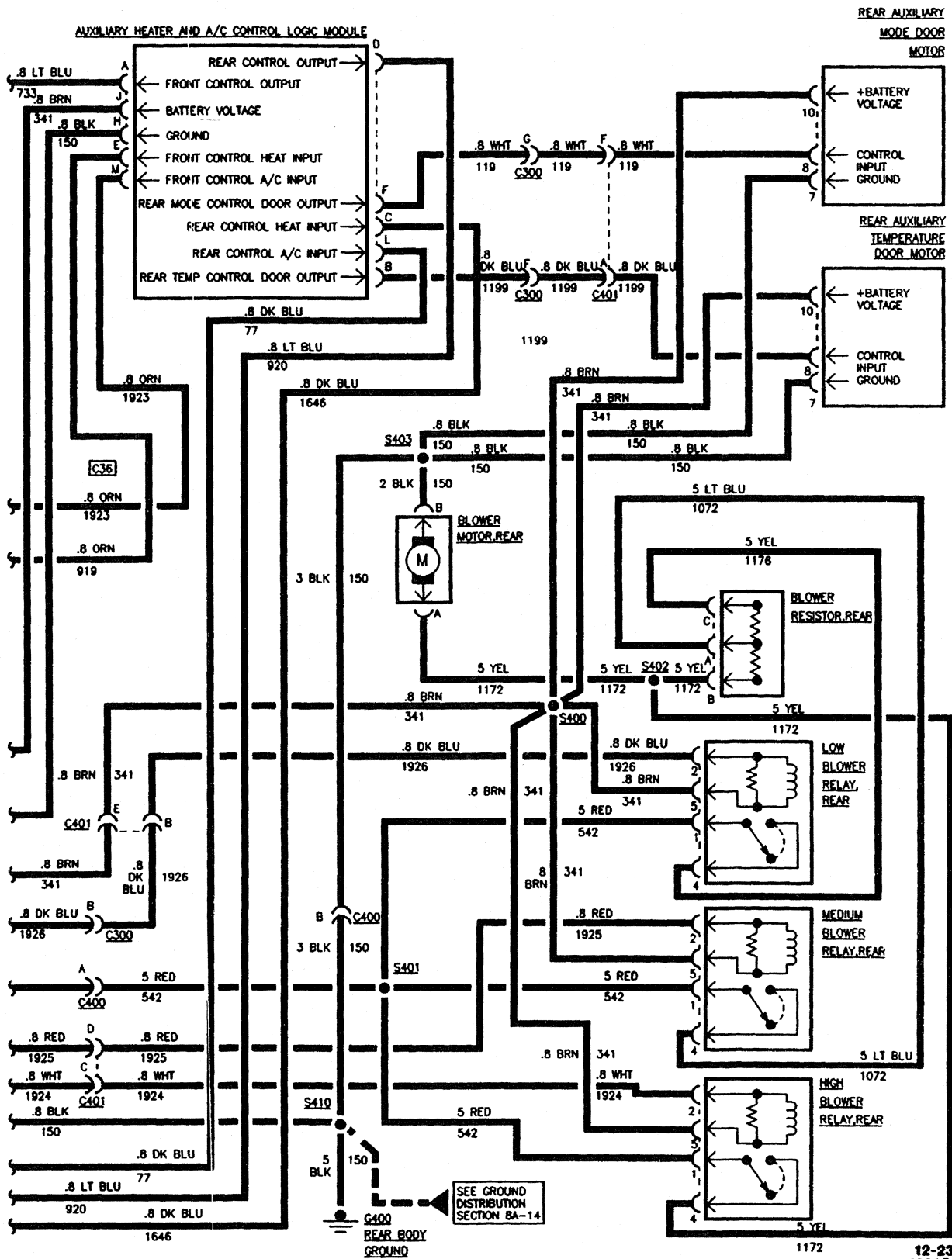


HVAC BLOWER CONTROL





HVAC BLOWER CONTROL REAR AUXILIARY



8A - 63 - 4 ELECTRICAL DIAGNOSIS

HVAC BLOWER CONTROL

COMPONENT	LOCATION	201-PG	FIG.	CONN
Auxiliary Heater and A/C Control Assembly, Front.....	Front of overhead console.....	38	.....	45
Auxiliary Heater and A/C Control, Rear	Rear of overhead console molding, in headliner			
Auxiliary Heater and A/C Logic Module	Rear of overhead console molding, in headliner			
Blower Motor	Under RH side of I/P	36	.....	43
Blower Motor, Rear	Behind RH rear wheelwell			
Blower Resistor Block.....	Under RH side of I/P, on HVAC plenum, center area	36	.....	43
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead.....	34	.....	41
Fuse Block - I/P Harness.....	Lower LH side of I/P	26	.....	31
High Blower Relay	Under I/P, on top of HVAC plenum	36	.....	43
High Blower Relay, Rear (auxiliary HVAC).....	On auxiliary HVAC plenum, forward of LH rear wheelhouse	47	.....	56
Low Blower Relay, Rear.....	On auxiliary heater and A/C module	47	.....	56
Medium Blower Relay, Rear.....	On auxiliary heater and A/C module	47	.....	56
Mode Door Motor (Module).....	Under I/P, on heater-A/C plenum, LH side	36	.....	43
Recirculation Door Motor	Under I/P, on heater-A/C case			
Temperature Door Motor (Module),Front	Under I/P, on heater-A/C plenum, center area.....	36	.....	43
Underhood Fuse-Relay Center ..	LH rear of engine compartment, on fender	5	.....	8
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7	.....	10
C203.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28	.....	33
C298.....	Behind LH side of I/P, near convenience center.....	27	.....	32
C300.....	In overhead console			
C400.....	RH rear of vehicle, above auxiliary blower motor			
C401.....	RH rear of vehicle, above auxiliary blower motor			
GROUND:				
G105 (VIN P)	RH top rear of cylinder head.....	15	.....	18
G105 (VIN Z, H, K)	RH front wheelhouse	1	.....	4
G200.....	Behind LH side of I/P, below fuse block			
G400.....	RH "B" pillar.....	41	.....	49
SPLICES:				
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S)	Engine harness, 5 cm from transmission harness breakout			

HVAC BLOWER CONTROL

COMPONENT	LOCATION	201-PG FIG. CONN
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout	
S110 (VIN H, K, N).....	Engine harness, approx. 21 cm from C100	
S110 (VIN P)	Engine harness, 15 cm from generator breakout	
S110 (VIN S)	Engine harness, 29 cm from C100	
S118.....	Diesel positive battery harness, 18 cm into generator breakout	
S204	I/P harness, approx. 4 cm left of steering column connector breakout	
S217	I/P harness, approx. 12 cm right of fuse block breakout	
S217 (Crew Cab, VIN F).....	I/P harness approx. 12 cm right of breakout for LH door jamb switch	
S217 (Diesel).....	I/P harness, approx. 12 cm right of headlamp dimmer switch breakout	
S243	HVAC harness, 4 cm from recirc door breakout	
S244	HVAC harness, 4 cm from recirc door breakout	
S304 (Suburban).....	Rear HVAC control harness, 31 cm forward of HVAC logic module breakout	
S305 (Suburban).....	Rear HVAC control harness, 31 cm forward of HVAC logic module breakout	
S306 (Suburban).....	Rear HVAC control harness, 19 cm forward of HVAC logic module breakout	
S307 (Suburban).....	Rear HVAC control harness, 10 cm forward of HVAC logic module breakout	
S308 (Suburban).....	Rear HVAC control harness, 5 cm rear of HVAC logic module breakout	
S309 (Suburban).....	Rear HVAC control harness, 12 cm rear of HVAC logic module breakout	
S310 (Suburban).....	Front to rear body harness, 6 cm from front dome lamp breakout	
S401 (Rear A/C)	Rear A/C harness, 23 cm from blower motor relays	
S401 (Rear Heat & A/C)	Rear heat and A/C harness, 13 cm from blower motor relays breakout	
S402 (Rear A/C)	Rear A/C harness, 7 cm from blower motor resistor breakout	
S402 (Rear Heat & A/C)	Rear heat and A/C harness, 7 cm from blower motor resistor breakout	
S403 (Rear Heat & A/C)	Rear heat and A/C harness, 7 cm from blower motor resistor breakout	
10 (2-Door Utility)	Front to rear lamps harness, 12 cm from RH rear door speaker breakout	
S410 (4-Door Utility)	Front to rear lamps harness, 22 cm from RH rear door speaker breakout	

HVAC BLOWER CONTROL

COMPONENT

LOCATION

201-PG FIG. CONN

S410 (Suburban)..... Front to rear lamps harness, 12 cm from RH rear door
speaker breakout

DIAGNOSIS - HVAC BLOWER

TROUBLESHOOTING HINTS:

1. Complete operational check to identify all display, air deliver, blower and refrigeration (A/C clutch) operating symptoms.
2. If refrigeration performance is symptom, refer to 1B of the 1995 C/K Service Manual.

BLOWER MOTOR DOES NOT OPERATE IN ANY MODE

TEST	RESULT	ACTION
1. Disconnect blower motor connectors. Place ignition switch in RUN position, A/C controller in VENT-UPPER and blower speed in HI. Connect voltmeter from CKT 65 at blower motor connector to ground.	Battery voltage.	GO to step 2.
	No voltage.	GO to step 3.
2. Connect voltmeter from CKT 65 at blower motor connectors.	Battery voltage.	REPLACE blower motor.
	No voltage.	LOCATE and REPAIR open in CKT 150 wire between blower motor connector and ground.
3. Ignition ON, blower speed low, connect test lamp to High blower relay connector CKT 65 and ground.	Test lamp does not light.	GO to step 4.
	Test lamp lights.	LOCATE and REPAIR open in CKT 65 between high blower relay connector.
4. Connect test lamp between CKT 101 at high blower relay and ground.	Test lamp does not light.	GO to step 5.
	Test lamp lights.	REPLACE high blower relay.
5. Ignition off, disconnect heater and A/C control module. Install test lamp across CKT 141 and ground, turn ignition on.	Test lamp lights.	GO to step 6.
	Test lamp does not light.	LOCATE and REPAIR open in CKT 141 wire.
6. Check for continuity of CKT 150 between heater and A/C control module connector terminal F, and ground.	Continuity.	GO to step 7.
	No continuity.	LOCATE and REPAIR open in CKT 150 between heater and A/C control module connector and ground.
7. Connect heater and A/C control module. Ignition ON, blower speed low, connect test lamp from CKT 60 of heater and A/C control module connector, and ground.	Test lamp lights.	GO to step 8.
	Test lamp does not light.	REPLACE heater and A/C control module.

HVAC BLOWER CONTROL

TEST	RESULT	ACTION
8. Check continuity of CKT 60, CKT 63, and CKT 72 between heater and A/C control module connector and the blower resistor connector.	Continuity.	GO to step 9.
	No continuity.	LOCATE and REPAIR open in respective wire(s).
9. Check continuity of CKT 101 between blower resistor connector and high blower relay connector.	Continuity.	REPLACE blower resistor.
	No continuity.	LOCATE and REPAIR open in CKT 101 between blower resistor connector and high blower relay.

DISPLAY DOES NOT DIM PROPERLY

TEST	RESULT	ACTION
1. Place ignition switch in RUN, A/C controller in OFF, light switch in PARK and dimming control to full brightness. Connect voltmeter from CKT 8 at heater and A/C control module connector to ground.	Battery voltage.	GO to step 2.
	No voltage.	LOCATE and REPAIR open in CKT 8 wire between heater and A/C control module connector and light switch connector.
2. Place dimming control to full brightness. Connect test lamp from CKT 150 at heater and A/C control module connector to ground.	Test lamp lights.	REPLACE heater and A/C control module.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between heater and A/C control module connector to ground.

BLOWER MOTOR DOES NOT OPERATE IN HIGH SPEED

TEST	RESULT	ACTION
1. Place ignition switch in run, and blower speed to HI. Connect test lamp from CKT 52 of high blower relay connector and ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (52) wire between high blower relay and heater and A/C control module connector. If OK, replace heater and A/C control module.
2. Connect test lamp from CKT 542 wire of high blower relay connector to ground.	Test lamp does not light.	LOCATE and REPAIR open in CKT 542 wire between high blower relay connector and underhood fuse-relay center.
	Test lamp lights.	GO to step 3.
3. Check for continuity of CKT 150 between the high blower relay connector and ground.	Continuity.	REPLACE high blower relay.
	No continuity.	LOCATE and REPAIR open in CKT 150 between high blower relay connector and ground.

BLOWER MOTOR DOES NOT OPERATE IN LOW SPEED ONLY

TEST	RESULT	ACTION
1. Check continuity of CKT 60 between heater and A/C control module connector and blower resistor connector.	No continuity.	LOCATE and REPAIR open in CKT 60 between blower resistor connector and heater and A/C control module connector. If OK, replace heater and A/C control module.
	Continuity.	REPLACE blower resistor.

HVAC BLOWER CONTROL

BLOWER MOTOR DOES NOT OPERATE IN MED1 SPEED ONLY

TEST	RESULT	ACTION
1. Check continuity of CKT 63 wire between heater and A/C control module connector and blower resistor connector.	No continuity.	LOCATE and REPAIR open in CKT 63 between heater and A/C control module connector and blower resistor connector.
	Continuity.	REPLACE blower resistor.

BLOWER MOTOR DOES NOT OPERATE IN MED2 SPEED ONLY

TEST	RESULT	ACTION
1. Check continuity of CKT 72 between heater and A/C control module connector and blower resistor connector.	No continuity.	LOCATE and REPAIR open in CKT 72 between heater and A/C control module connector and blower resistor connector.
	Continuity.	REPLACE blower resistor.

DIAGNOSIS - REAR AUXILIARY HVAC BLOWER CONTROL

TROUBLESHOOTING HINTS:

1. Check condition of RR HVAC, ILLUM, and A/C Fuses. If fuse(s) is open, locate and repair source of overload. Replace fuse.

2. If blower operates from one set of blower controls but not the other, check wires between both sets of controls for opens.

BLOWER DOES NOT OPERATE AT LOW SPEED ONLY

TEST	RESULT	ACTION
1. Place ignition in RUN. Check for voltage on CKT 341 at low blower relay connector.	Battery voltage.	GO to step 2.
	No voltage.	LOCATE and REPAIR open in CKT 341 between low blower relay connector and splice S434.
2. Check continuity of CKT 1926 between low blower relay connector and auxiliary heater and A/C controls connectors (front and rear).	Continuity.	GO to step 3.
	No continuity.	LOCATE and REPAIR open in CKT 1926 between low blower relay connector and auxiliary heater and A/C controls connectors (front and rear).
3. Check for voltage on CKT 542 at low blower relay connector.	Battery voltage.	GO to step 4.
	No voltage.	LOCATE and REPAIR open in CKT 542 between low blower relay connector and splice S435.
4. Check continuity of CKT 1176 between low blower relay connector and blower resistor connector.	Continuity.	GO to step 5.
	No continuity.	LOCATE and REPAIR open in CKT 1176 between low blower relay connector and blower resistor connector.
5. Place auxiliary controls in LOW, ignition in RUN, check CKT 1176 for battery voltage at blower resistor connector.	Battery voltage.	Replace blower resistor.
	No voltage.	GO to step 6.

HVAC BLOWER CONTROL

TEST	RESULT	ACTION
6. Using jumper wire, ground CKT 1926 at low blower relay, then check CKT 1176 for battery voltage at blower resistor connector.	Battery voltage.	REPLACE auxiliary heater and A/C control.
	No voltage.	REPLACE low blower relay.

BLOWER DOES NOT OPERATE AT MEDIUM SPEED ONLY

TEST	RESULT	ACTION
1. Place ignition in RUN. Check for voltage on CKT 341 at medium blower relay connector.	Battery voltage.	GO to step 2.
	No voltage.	LOCATE and REPAIR open in CKT 341 between medium blower relay connector and splice S434.
2. Check continuity of CKT 1925 between medium blower relay connector and auxiliary heater and A/C controls connectors (front and rear).	Continuity.	GO to step 3.
	No continuity.	LOCATE and REPAIR open in CKT 1925 between medium blower relay connector and auxiliary heater and A/C controls connectors (front and rear).
3. Check for voltage on CKT 542 at medium blower relay connector.	Battery voltage.	GO to step 4.
	No voltage.	LOCATE and REPAIR open in CKT 542 between medium blower relay connector and splice S435.
4. Check continuity of CKT 1072 between medium blower relay connector and blower resistor connector.	Continuity.	GO to step 5.
	No continuity.	LOCATE and REPAIR open in CKT 1072 between medium blower relay connector and blower resistor connector.
5. Place auxiliary controls in MEDIUM, ignition in RUN, check CKT 1072 for battery voltage at blower resistor connector.	Battery voltage.	Replace blower resistor.
	No voltage.	GO to step 6.
6. Using jumper wire, ground CKT 1925 at medium blower relay, then check CKT 1072 for battery voltage at blower resistor connector.	Battery voltage.	REPLACE auxiliary heater and A/C control.
	No voltage.	REPLACE medium blower relay.

BLOWER DOES NOT OPERATE AT HIGH SPEED ONLY

TEST	RESULT	ACTION
1. Place ignition in RUN. Check for voltage on CKT 341 at high blower relay connector.	Battery voltage.	GO to step 2.
	No voltage.	LOCATE and REPAIR open in CKT 341 between high blower relay connector and splice S434.
2. Check continuity of CKT 1924 between high blower relay connector and auxiliary heater and A/C controls connectors (front and rear).	Continuity.	GO to step 3.
	No continuity.	LOCATE and REPAIR open in CKT 1924 between low blower relay connector and auxiliary heater and A/C controls connectors (front and rear).

HVAC BLOWER CONTROL

TEST	RESULT	ACTION
3. Check for voltage on CKT 542 at high blower relay connector.	Battery voltage.	GO to step 4.
	No voltage.	LOCATE and REPAIR open in CKT 542 between high blower relay connector and splice S435.
4. Check continuity of CKT 1172 between high blower relay connector and blower motor connector.	Continuity.	GO to step 5.
	No continuity.	LOCATE and REPAIR open in CKT 1172 between high blower relay connector and blower motor connector.
5. Place auxiliary controls in HIGH, ignition in RUN. Using jumper wire, ground CKT 1924 at high blower relay, then check CKT 1172 for battery voltage at blower motor connector.	Battery voltage.	REPLACE heater and A/C controllers.
	No voltage.	REPLACE high blower relay.

BLOWER DOES NOT OPERATE IN ANY MODE

TEST	RESULT	ACTION
1. Disconnect auxiliary heater and A/C control connectors (front and rear), place ignition in RUN, check for battery voltage on CKT 341 at terminal G of each control connector.	Battery voltage.	GO to step 2.
	No voltage.	LOCATE and REPAIR open in CKT 341 between control connectors and fuse block.
2. Check CKT 542 for battery voltage at LOW, MEDIUM and HIGH blower relays.	Battery voltage.	GO to step 3.
	No voltage.	LOCATE and REPAIR open in CKT 542 between relays and underhood fuse-relay center.
3. Check for continuity of CKT 150 between auxiliary heater and A/C control connectors, terminal B and ground.	Continuity.	GO to step 4.
	No continuity.	LOCATE and REPAIR open in CKT 150 between control connectors and ground.
4. Check for continuity of CKT 1172 between blower motor connector and blower resistor connector.	Continuity.	GO to step 5.
	No continuity.	LOCATE and REPAIR open in CKT 1172 between blower motor connector and blower resistor connector.
5. Check for continuity of CKT 150 between blower motor connector and ground.	Continuity.	GO to step 6.
	No continuity.	LOCATE and REPAIR open in CKT 150 between blower motor connector and ground.
6. Using fused jumper, apply battery voltage to blower motor connector terminal A.	Blower motor runs.	GO to step 7.
	Blower motor does not run.	REPLACE blower motor.
7. Check the following wires for continuity between the auxiliary heater and A/C control connectors and their respective relays: WIRE RELAY DK BLU (1926) LOW RED (1925) MEDIUM WHT (1924) HIGH	Continuity.	REPLACE the auxiliary heater and A/C controllers.
	No continuity.	LOCATE and REPAIR open in respective wires.

HVAC BLOWER CONTROL

CIRCUIT OPERATION

BLOWER CONTROLS

Battery voltage is supplied with the ignition switch in RUN to Terminal A2 of the High Blower Relay through RED (542) wire. When the Heater and A/C Control Module is OFF, the High Blower Relay is de-energized. In this state there is no voltage path through the relay contacts to the Blower Motor so the Blower Motor does not run.

With the Heater and A/C Control Module in Low, Terminal E, CKT 60, of the Heater and A/C Control Module supplies voltage through the closed contacts of the Low Blower Relay and the three Blower Resistors to the Blower Motor. The Blower Motor is a variable speed motor which runs at a speed proportional to the voltage supplied to the Motor. With all three Blower Resistors in the circuit, the supplied voltage is low and the Blower runs slowly.

In either of the Medium blower speed positions, MED1 or MED2, Terminal D (TAN, MED1) or C (LT BLU, MED2) of the Heater and A/C Control Module supplies voltage through the de-energized High Blower Relay and either one or two of the Blower Resistors allowing the Blower Motor to operate at increased speed.

With the Heater and A/C Control Module in High, the High Blower Relay is energized. The voltage path is then through the normally closed contacts of the High Blower Relay to the Blower Motor. With battery voltage supplied directly to the Motor, it runs at maximum speed.

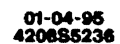
REAR AUXILIARY HEATER AND AIR CONDITIONING

The Rear Auxiliary Heater and Air Conditioning Module is operated by either of two control panels in the overhead console. The front control has the capability to override the rear control settings. The controls select the blower fan's three operating speeds: LO, MED and HI.

The fan speeds are controlled by the selector control and the selected speed blower relay. Battery voltage is supplied from the A/C fuse in the underhood fuse-relay center through the CKT 542. Battery voltage is also supplied to each relay through the RR HVAC #5 and the CKT 341. The blower speed control switch grounds the relays through the DK BLU (1926) LO speed, RED (1925) MED speed or the WHT (1924) HI speed wire. The CKT 150 completes the path to ground from the blower speed switch to the rear body ground.

The front and rear control switch panels in the overhead console are both backlit. With the park lamps on, battery voltage is supplied to the lamps by the ILLUM fuse #14 and the CKT 8. Ground is provided by the CKT 150 from the rear body ground. The panel dimmer switch controls the lamp's illumination intensity.

HVAC COMPRESSOR CONTROL



HVAC COMPRESSOR CONTROL

COMPONENT	LOCATION	201-PG	FIG.	CONN
A/C Compressor Clutch.....	Front of A/C compressor			
A/C Compressor Clutch Relay..	In underhood fuse/relay center			
A/C High Pressure Cutout Switch (VIN F, S).....	On rear portion of A/C compressor			
A/C Low Pressure Cutout Switch (VIN P, F, S).....	At A/C accumulator, RH rear of engine compartment			
Fuse Block I/P Harness	Lower LH side of I/P	26.....		31
Powertrain Control Module (PCM).....	Under RH end of I/P, above blower motor	29.....		34
Water Valve (Suburban Only) ...	RH center of intake area, behind turbo plenum	16.....		19
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead	7.....		10
C200.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28.....		33
DIODES:				
D102.....	Engine harness, approx. 6 cm from auxiliary cooling fan switch breakout			
D102 (VIN H, K auto w/C60) .	Underhood fuse relay center breakout, approx. 15 cm from engine harness			
D102 (VIN N w/MW3).....	Approx. 27 cm from A/C low pressure cutout switch			
GROMMETS:				
P101	LH rear of engine compartment at bulkhead			
GROUNDS:				
G105 (VIN Z, H, K)	RH front wheelhouse	1.....		4
SPLICES:				
S105 (VIN F).....	Engine harness, 4 cm from A/C high pressure switch breakout			
S105 (VIN P).....	Engine harness, 4 cm from A/C high pressure switch breakout			
S105 (VIN S).....	Engine harness, 4 cm from A/C high pressure switch breakout			
S105 (VIN Z, H, K, N)	In generator breakout, approx. 28 cm from main engine harness			
S107 (VIN F).....	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P).....	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S).....	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout			

HVAC COMPRESSOR CONTROL

DIAGNOSIS - AIR CONDITIONING COMPRESSOR CONTROLS

TROUBLESHOOTING HINTS:

1. Check the condition of the refrigerant to ensure adequate system pressure. Outside temperature must be above 16°C (60°F) in order to properly diagnose system.
2. If system is leaking, refer to Section 1B of the 1995 C/K Service Manual. Check to ensure connector contacts are not out of place or missing and that connectors are firmly seated.
3. Check condition of A/C HTR Fuse (#12). If fuse is open, locate and repair source of overload. Replace fuse.
- Refer to Sections 1A or 8C for Heater-AC and Rear Defogger Control Assembly access.
- Check for a broken (or partially broken) wire inside of the insulation which could cause system failure but prove "GOOD" in a continuity/voltage check (see "Troubleshooting Procedures," page 8A-4-0).
- Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," page 8A-4-0).

A/C COMPRESSOR CLUTCH DOES NOT ENGAGE

TEST	RESULT	ACTION
1. Disconnect A/C Compressor Clutch Relay. Place ignition switch in "RUN." Turn on A/C switch. Connect test lamp from A/C controller term "A4" to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	Check/Repair open in CKT 66. If OK, replace heater and A/C control module.
2. Connect test lamp from A/C compressor clutch relay term "B4" to ground.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	GO to step 3.
3. Disconnect A/C low pressure cutout switch. Ignition switch in "RUN." Connect test lamp from term "A" to ground.	Test lamp lights.	Check/Repair open in CKT 603. If OK, replace A/C low pressure cutout switch.
	Test lamp does not light.	Repair open in CKT 1240.
4. Connect test lamp from A/C compressor clutch relay term "B6" to battery.	Test lamp lights.	
	Test lamp does not light.	Repair open in CKT 150.
5. Disconnect A/C HI Pressure Cutout Switch. Ignition switch in "RUN." Connect test lamp from term "A" to ground. A/C switch "ON."	Test lamp lights.	GO to step 6.
	Test lamp does not light.	Repair open in CKT 203.
6. Connect DVOM across A/C Hi Pressure Cutout Switch terms "A" and "B."	Continuity.	GO to step 7.
	No continuity.	Replace A/C Hi Pressure Cutout Switch.
7. Disconnect A/C Compressor Clutch. Ignition switch in "RUN." A/C switch "ON." Connect test lamp from term "A" to battery.	Test lamp lights.	Check/Repair open in CKT 59. If OK, replace A/C compressor clutch
	Test lamp does not light.	Repair open in CKT 150.

HVAC COMPRESSOR CONTROL

CIRCUIT OPERATION

The Compressor for the Air Conditioning System is driven by the engine by means of a belt drive and the A/C Compressor Clutch. The Clutch allows the Compressor to be disengaged when Air Conditioning is not required.

When the Ignition Switch is in RUN, battery voltage is supplied to the Heater and A/C Control Module through CKT 141 and the A/C Compressor Clutch Relay by means of CKT 1240, Low Pressure Cutout Switch, and CKT 603. With A/C "ON" requested, the Heater and A/C Control Module supplies voltage to coil of the A/C Compressor Clutch Relay and grounds through CKT 150. The relay switch closes sending power through CKT 203, the A/C High Pressure Cutout Switch, and CKT 59 to the A/C Compressor Clutch. The coil is then energized by grounding through CKT 150 and engages the clutch.

The A/C Compressor Clutch Diode is connected across the terminals of the A/C Compressor Clutch. Whenever the clutch is de-energized, the magnetic field around it collapses, generating an induced voltage in the clutch coil. The Diode provides a path for the current resulting from the induced voltage so that other circuit components are not damaged.



AUDIBLE WARNINGS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center	Under LH side of I/P.....	34	41	
Door Jamb Switch, LH Front ...	At LH end of I/P			
I/P Fuse Block.....	Lower LH side of I/P			
Instrument Cluster.....	LH upper end of I/P			
Safety Belt Retractor Switch.....	At driver's stationery belt connector	40	47	
CONNECTORS:				
C210.....	At convenience center.....	27	32	
C266.....	LH side of steering column, near bulkhead.....	26	31	
C298.....	Behind LH side of I/P, near convenience center			
GROUND:				
G200.....	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S213	I/P harness, 16 cm right of fuse block breakout			
S213 (Crew Cab, VIN F).....	I/P harness approx. 16 cm right of breakout for LH door jamb switch			
S213 (Diesel).....	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout			
S217	I/P harness, approx. 12 cm right of fuse block breakout			
S217 (Crew Cab, VIN F).....	I/P harness approx. 12 cm right of breakout for LH door jamb switch			
S217 (Diesel).....	I/P harness, approx. 12 cm right of headlamp dimmer switch breakout			
S226	Approx. 41 cm from DERM connector			
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout			
S259 (Suburban).....	Crossbody harness, 17 cm right of door lock relay breakout			
S259 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 25 cm into LH seat breakout			

AUDIBLE WARNINGS

DIAGNOSIS - AUDIO ALARM MODULE

TROUBLESHOOTING HINTS:

1. Check that GAUGES FUSE 4, ILLUM FUSE 14 and STOP/HAS FUSE 1 are not open. If fuse(s) is open, then LOCATE and REPAIR source of overload and REPLACE fuse(s).
2. Check that G200 is clean and tight.
3. Check Fasten Safety Belts Indicator for an open filament.
4. If all warning alarms are inoperative, then check for an open in BLK (150) wire between Convenience Center and G200. If OK, REPLACE Audio Alarm Module.
5. Check that Audio Alarm Module is securely mounted in Convenience Center.
6. Check that the LH Door Jamb Switch operates freely.
 - Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
 - Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4). If the Lamps - On Warning is inoperative, check to see that the Panel Dimmer Switch is not in the fully dim position.

THE FASTEN BELTS WARNING ALARM OPERATES WHEN SAFETY BELT IS FASTENED

TEST	RESULT	ACTION
1. Disconnect safety belt retractor switch connector.	Fasten Belts Warning alarm stops.	REPLACE safety belt retractor switch.
	Fasten Belts Warning alarm continues.	LOCATE and REPAIR short to ground BLK/WHT (238) wire Safety Belt Retractor Switch Connector between convenience center. If wire is good, REPLACE Audio Alarm Module.

THE FASTEN BELTS WARNING ALARM DOES NOT OPERATE

TEST	RESULT	ACTION
1. With ignition switch in RUN and audio alarm module removed, connect test lamp from PNK (39) wire at convenience center to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in PNK (39) wire from convenience center to I/P fuse block.
2. Fasten Safety Belt. Connect test lamp from Audio Alarm Module cavity "K1" to B+.	Test lamp lights.	REPLACE audio alarm module.
	Test lamp does not light	GO to step 3.
3. Backprobe Safety Belt Retractor Switch Connector with a test lamp from cavity "B" to B+.	Test lamp does not lights.	GO to step 4.
	Test lamp does not light 5.	LOCATE and REPAIR open in BLK/WHT (238) wire between safety belt retractor switch connector and convenience center.
4. Baskprobe Safety Belt Retractor Switch Connector with a test lamp from cavity "A" to B+.	Test lamp light.	REPLACE safety belt retractor switch.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between safety belt retractor switch and ground.

AUDIBLE WARNINGS**KEY-IN WARNING ALARM DOES NOT OPERATE**

TEST	RESULT	ACTION
1. Remove Audio Alarm Module from Convenience Center. Connect a test lamp from Audio Alarm Module cavity "J2" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (140) wire between I/P fuse Block and Convenience Center.
	Test lamp lights.	GO TO step 2.
2. Connect a test lamp from Audio Alarm Module cavity "K2" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Convenience Center and G200.
	Test lamp lights.	GO TO step 3.
3. Place ignition key in the Ignition Switch. Leave Ignition Switch in the "LOCK" position. Open LH Front Door. Connect a test lamp from Audio Alarm Module cavity "J3" to B+.	Test lamp lights.	REPLACE Audio Alarm Module.
	Test lamp does not light.	GO TO step 4.
4. Backprobe LH Door Jamb Switch Connector with a test lamp from cavity "C" to B+.	Test lamp lights.	Check for an open in the LT GRN (80) wire between the Convenience Center and the Key-In Warning Buzzer Switch or in the TAN (159) wire between the Key-In Warning Buzzer Switch and LH Door Jamb Switch. If OK, REPLACE Key-In Warning Buzzer Switch.
	Test lamp does not light.	GO TO step 5.
5. Backprobe LH Door Jamb Switch Connector with a test lamp from cavity "B" to B+.	Test lamp lights.	REPLACE LH Door Jamb Switch.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between LH Door Jamb Switch and G200.

LAMPS-ON WARNING ALARM DOES NOT OPERATE

TEST	RESULT	ACTION
1. Remove audio alarm module. Place ignition switch in RUN. Turn Headlamps switch ON. Connect voltmeter from PNK (39) wire at convenience center to ground.	Battery voltage.	GO to step 2.
	No voltage.	LOCATE and REPAIR open in PNK (39) wire between convenience center and I/P fuse block.
2. Connect voltmeter from GRY (8) wire at convenience center to ground.	Battery voltage.	GO to step 3.
	No voltage.	LOCATE and REPAIR open in GRY (8) wire between convenience center and I/P fuse block.
3. Connect a test lamp from Audio Alarm Module cavity "K2" to B+.	Test lamp light.	REPLACE audio alarm module.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between convenience center and ground G200.

AUDIBLE WARNINGS**FASTEN SAFETY BELTS INDICATOR IS INOPERATIVE**

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Leave safety belt unfastened. Does the "Fasten Belts Warning Alarm" sound?	NO	GO TO "THE FASTEN BELTS WARNING ALARM DOES NOT OPERATE" table earlier in this section.
	YES	GO TO step 2.
2. Turn Ignition Switch to "LOCK." Remove Audio Alarm Module from the Convenience Center. Connect a fused jumper from Audio Alarm Module cavity "K3" to ground. Turn Ignition Switch to RUN.	Fasten Safety Belts Indicator lights.	REPLACE Audio Alarm Module.
	Fasten Safety Belts Indicator does not light.	GO TO step 3.
3. Backprobe Instrument Cluster Printed Circuit Connector with a fused jumper from cavity "30" to ground.	Fasten Safety Belts Indicator lights.	LOCATE and REPAIR open in YEL (234) wire between Convenience Center and Instrument Cluster Printed Circuit.
	Fasten Safety Belts Indicator does not light.	Check for an open in PNK (39) wire between I/P Fuse Block and Instrument Cluster Printed Circuit. If OK, REPLACE Instrument Cluster Printed Circuit.

FASTEN SAFETY BELTS INDICATOR IS ON WITH SAFETY BELT FASTENED

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Does the "Fasten Belts Warning Alarm" sound?	YES	GO TO "FASTEN BELTS WARNING ALARM OPERATES WHEN SAFETY BELT IS FASTENED" table earlier in this section.
	NO	GO TO step 2.
2. Remove Audio Alarm Module from Convenience Center.	Fasten Safety Belts Indicator goes out.	REPLACE Audio Alarm Module.
	Fasten Safety Belts Indicator remains lit.	Check for a short to ground in YEL (234) wire between Convenience Center and Instrument Cluster Printed Circuit. If OK, REPLACE Instrument Cluster Printed Circuit.

CIRCUIT OPERATION**FASTEN BELTS WARNING ALARM**

The Fasten Belts Warning Alarm will sound when the following conditions are met simultaneously: The Ignition Switch is in the RUN, BULB TEST or START position and the LH front safety belt is not fastened. The Audio Alarm Module has a logic circuit which senses whether or not the LH front safety belt is fastened. When the LH front safety belt is not fastened, voltage being sensed at the Audio Alarm Module is high, thus indicating that the LH front safety belt is unfastened. The alarm will sound for approximately five seconds if the LH front safety belt is not fastened. The Audio Alarm Module's Fasten Safety Belt Warning Alarm also incorporates an indicator within the Instrument Cluster Printed Circuit. The Fasten Safety

Belts Indicator works in conjunction with the Fasten Belts Warning Alarm. Voltage is applied to the indicator through the GAUGES FUSE 4 when the Ignition Switch is in the RUN, BULB TEST or START position. The Audio Alarm Module controls the ground path to the indicator. When the Audio Alarm Module receives a signal that the LH Front Safety Belt is unfastened, it completes the ground path for the Fasten Safety Belts Indicator.

KEY-IN WARNING ALARM

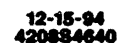
The Key-In Warning Alarm will sound if the following conditions are met simultaneously: The ignition key must be in the Ignition Switch with the Ignition Switch in the ACC, LOCK or OFF position and the LH Front door must be open. The Audio Alarm Module incorporates a logic circuit which senses whether or not the conditions are

AUDIBLE WARNINGS

present for activating the alarm (ignition key in the Ignition Switch and the LH front door open). When the ignition key is in the Ignition Switch and the LH front door is open, the Key-In Warning Buzzer Switch is closed as is the LH Door Jamb Switch. When both of these switches are closed, the voltage being monitored at the Audio Alarm Module is low, thus indicating that the conditions are present for activating the Key-In Warning Alarm. The Key-In Warning Alarm will stop sounding if the ignition key is removed from the Ignition Switch, the LH front door is closed or the Ignition Switch is turned to the RUN position.

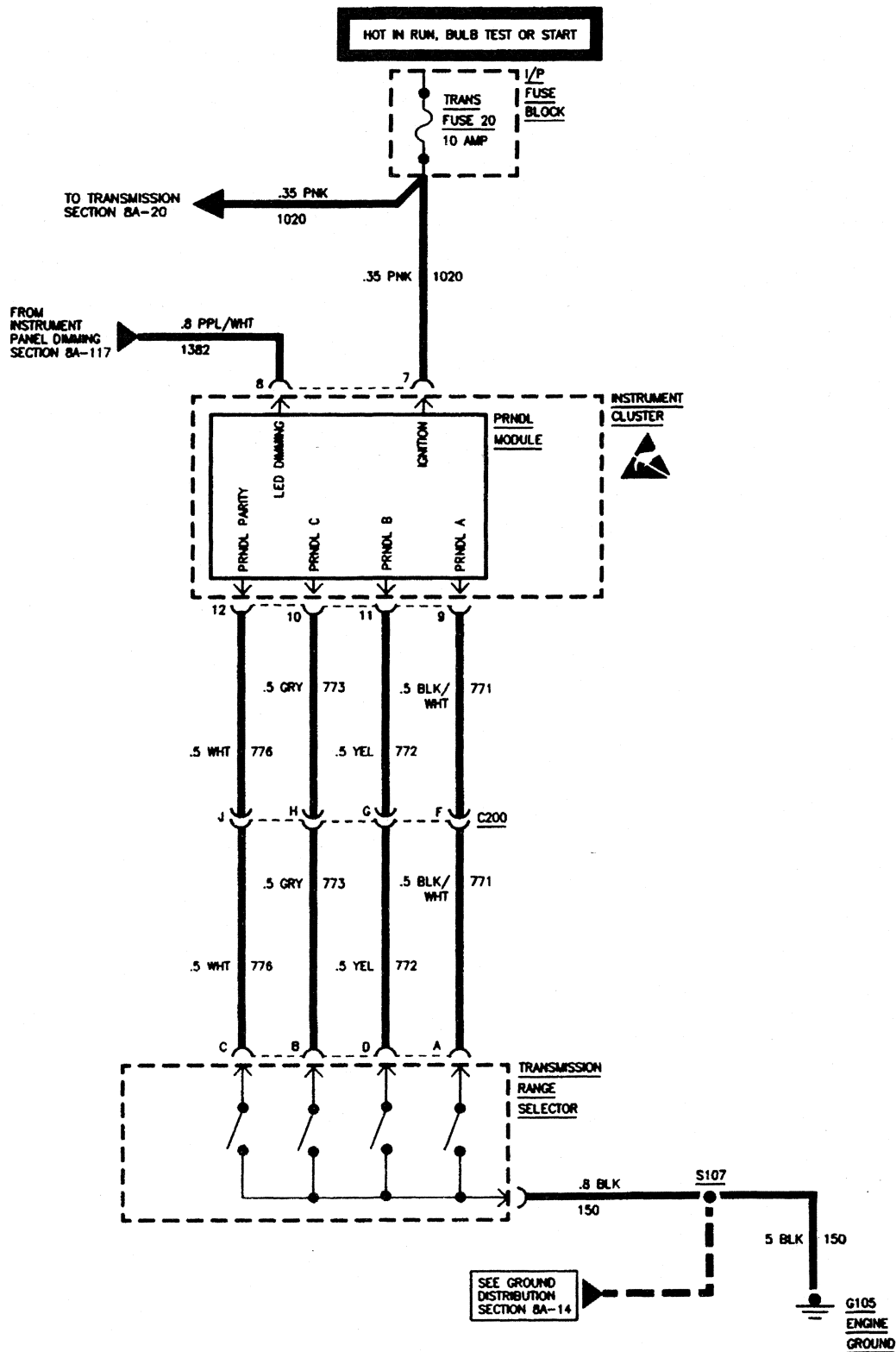
LAMPS-ON WARNING ALARM

The Lamps-ON Warning Alarm will sound if the following conditions are met simultaneously: The Headlamp and Panel Dimmer Switch must be in the HEAD or PARK position, The Panel Dimmer Switch is not in the fully dim position and the Ignition Switch must be in the LOCK, ACC or OFF position. When the Headlamp and Panel Dimmer Switch is in the HEAD or PARK position, voltage is applied through the ILLUM FUSE 14 to the Audio Alarm Module. When voltage is sensed at the Lamps ON Input terminal of the Audio Alarm Module and there is an absence of voltage at the Ignition ON Input terminal, then the Lamps-ON Warning Alarm will sound (if the Dimmer Switch in the Headlamp and Panel Dimmer Switch is positioned at its dimmest setting, then the voltage present at the Lamps-ON Input terminal may not be high enough to activate the Lamps-ON Warning Alarm). The Lamps-ON Warning Alarm can be disabled by either turning the Headlamp and Panel Dimmer Switch to the OFF position or turning the Ignition Switch to the RUN position.





**INSTRUMENT CLUSTER: WITH GAGES
ELECTRONIC PRNDL**



INSTRUMENT CLUSTER: WITH GAGES

COMPONENT	LOCATION	201-PG	FIG.	CONN
Diagnostic Energy Reserve Module (DERM).....	Behind center of I/P			
Engine Coolant Temperature Sender.....	LH cylinder head, near # 1 spark plug			
Fuel Pump and Sender	In fuel tank			
Fuel Pump Oil Pressure Switch & Sensor (VIN Z).....	Rear of engine, near distributor shaft.....	8	11	
Fuel Pump Oil Pressure Switch and Sender (VIN H, K).....	Rear top center of engine, behind distributor	11	14	
Fuel Pump Oil Pressure Switch and Sender (VIN N).....	LH lower front of engine, near damper pulley	12	15	
Fuel Pump Oil Pressure Switch and Sender (VIN P, F, S)	LH rear of engine, at 2 o'clock position			
Fuse Block.....	Lower LH side of I/P.....	26	31	
Generator (DIESEL).....	LH top of engine.....	1	3	
Ignition Coil (VIN H, K).....	Center rear of engine	11	14	
Ignition Coil (VIN N)	Center rear of engine	12	15	
Ignition Coil (VIN Z).....	Center rear of engine	8	11	
Instrument Cluster.....	LH upper end of I/P	32, 46	39, 58	202-9
I/P Fuse Block.....	Lower LH side of I/P			
Low Engine Coolant Level Indicator Module (DIESEL) ..	Under center of I/P	31	37	
Low Engine Coolant Level Sensor (VIN P, F, S).....	In coolant reservoir, RH side of engine compartment			
Oil Pressure Sender (Diesel)	LH rear top of engine.....	14	17	
Powertrain Control Module (PCM).....	Under RH end of I/P, above blower motor	29	34	
PRNDL	In Instrument Cluster			
Transmission Range Selector.....	LH side center of transmission	18	21	
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5	8	
Water-In-Fuel Sensor (DIESEL)	Top rear of engine.....	15	18	
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7	10	
C104.....	LH rear of engine compartment, under brake master cylinder			
C200.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28	33	
GROUND:				
G105 (VIN P)	RH top rear of cylinder head.....	15	18	
G105 (VIN Z, H, K)	RH front wheelhouse	1	4	
G200.....	Behind LH side of I/P, below fuse block			

INSTRUMENT CLUSTER: WITH GAGES

COMPONENT	LOCATION	201-PG	FIG.	CONN
GROMMETS:				
P100	LH rear of engine compartment at bulkhead.....	7	.....	10
P101	RH rear of engine compartment, at bulkhead			
SPLICES:				
S102 (VIN H, K).....	In tachometer breakout, 10 cm from engine harness			
S102 (VIN N).....	In ignition coil breakout, approx. 10 cm from engine harness			
S102 (VIN Z).....	In generator breakout, approx. 10 cm from engine harness			
S107 (VIN F).....	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P).....	Engine harness, 5 cm from transmission harness breakout			
S108 (VIN F).....	Engine harness, 5 cm from generator breakout			
S108 (VIN H, K).....	Engine harness, approx. 7 cm from windshield wiper motor breakout			
S108 (VIN N).....	Engine harness, approx. 7 cm from windshield washer motor breakout			
S108 (VIN P).....	Engine harness, 5 cm from transmission harness breakout			
S108 (VIN S).....	Engine harness, 5 cm from generator breakout			
S108 (VIN Z).....	Engine harness, approx. 32 cm from windshield washer motor breakout			
S204 (GAS).....	I/P harness, approx. 4 cm left of steering column connector breakout			
S213 (DIESEL).....	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout			
S218	I/P harness, approx. 4 cm left of steering column connector breakout			
S240 (Crew Cab, VIN F).....	I/P harness, approx. 4 cm left of turn signal flasher breakout			
S240 (Diesel).....	I/P harness, approx. 11 cm left of breakout crossbody harness connector C298			
S240 (w/DRL).....	I/P harness, approx. 4 cm left of turn signal flasher breakout			
S240 (w/o DRL)	I/P harness, approx. 11 cm from cruise control harness breakout			

INSTRUMENT CLUSTER: WITH GAGES**DIAGNOSIS**

The following list symptoms for clusters are not covered in this section. The symptoms will be referenced to the appropriate subject located within this manual or will show what manual to use

SYMPTOM	FOR DIAGNOSIS
HI Beam indicator does not operate properly.....	See Headlights (8A-100)
FASTEN BELTS indicator and alarm do not operate properly	See Safety belt Warnings buzzer (Section 8A-76)
Brake indicator is always lit	Refer to Service Manual Section 5E
Brake indicator does not light when park brake is Applied....	Refer to Service Manual Section 5E
Malfunction indicator is Always Lit.....	Refer to Driveability and Emissions Manual Section 3
Malfunction Indicator Does Not Light With The Ignition Switch In Run And Engine Not Running.....	Refer to Driveability and Emissions Manual Section 3
Turn Indicator Does Not Operate Properly	See Front Exterior Lamps (Section 8A-110)
Wait indicator Does Not Operate Properly	Refer to Driveability and Emissions Manual Section 3
Service Fuel Filter Indicator Does Not Operate Properly.....	Refer To Driveability And Emissions Manual Section 3

DIAGNOSIS-INSTRUMENT CLUSTER: WITH GAGES**TROUBLESHOOTING HINTS:**

1. Check condition of GAGES Fuse If fuse is blown, LOCATE and REPAIR source of overload. Replace fuse.

FUEL GAGE IS INACCURATE

TEST	RESULT	ACTION
1. Disconnect fuel pump and sender connector. Connect one red lead of tester J33431-B to PPL (30) wire and other to ground. Set resistance dials to 0 ohms and then to 90 ohms. Fuel gage should indicate empty and then slowly move to full.	Gage responds correctly.	REPLACE fuel pump and sender.
	Gage does not respond correctly.	CHECK for high resistance in PPL (30) wire. If wire is good, REPLACE fuel gage.

FUEL GAGE INDICATES FULL OR BEYOND AT ALL TIMES

TEST	RESULT	ACTION
1. Disconnect fuel pump and sender connector and place ignition switch in RUN. Connect fused jumper from PPL (30) wire at fuel pump and sender connector to ground.	Fuel gage indicates full.	LOCATE and REPAIR open in PPL (30) wire between fuel pump and sender connector and instrument cluster connector. If no open is found, REPLACE fuel gage.
	Fuel gage indicates empty.	REPLACE fuel pump and sender.

INSTRUMENT CLUSTER: WITH GAGES**FUEL GAGE INDICATES EMPTY WHEN THERE IS FUEL IN THE TANK**

TEST	RESULT	ACTION
1. Disconnect fuel pump and sender connector and place ignition switch in RUN.	Fuel gage indicates full.	REPLACE fuel pump and sender.
	Fuel gage indicates empty.	LOCATE and REPAIR a short in PPL (30) wire between fuel pump and sender connector and instrument cluster connector. If not short is found, REPLACE fuel gage.

TEMPERATURE GAGE INDICATES HOT WITH ENGINE COOLANT BELOW OPERATING TEMPERATURE AND IGNITION SWITCH IN RUN

TEST	RESULT	ACTION
1. Disconnect engine coolant temperature sender connector and place ignition switch in RUN.	Temperature gage indicates cold.	REPLACE engine coolant temperature sender.
	Temperature gage does not indicate cold.	LOCATE and REPAIR a short in DK GRN (35) wire between engine coolant temperature sender connector and instrument cluster connector. If no short is found, REPLACE Temperature Gage.

TEMPERATURE GAGE INDICATES COLD ALL THE TIME

TEST	RESULT	ACTION
1. Disconnect engine coolant temperature sender connector. Ground the DK GRN (35) wire at engine temperature sender connector. Place ignition switch in RUN.	Temperature gage indicates hot.	REPLACE engine coolant temperature sender.
	Temperature gage does not indicate hot.	LOCATE and REPAIR open in DK GRN (35) wire between engine coolant temperature sender connector and instrument cluster connector. If wire is good, REPLACE temperature gage.

TEMPERATURE GAGE IS NOT ACCURATE

TEST	RESULT	ACTION
1. Disconnect engine coolant temperature sender connector. Connect red lead from J 33431-B tester to DK GRN (35) wire and other lead to ground. Adjust resistance dials to 1400 ohms and then to 55 ohms. Temperature gage should indicate cold then hot.	Gage indicates correctly.	REPLACE engine coolant temperature sender.
	Gage is not correct.	LOCATE and REPAIR open in DK GRN (35) wire between engine coolant temperature sender connector and instrument cluster connector. If wire is good, REPLACE temperature gage.

INSTRUMENT CLUSTER: WITH GAGES**OIL PRESSURE GAGE IS NOT ACCURATE**

TEST	RESULT	ACTION
1. Disconnect fuel pump oil pressure switch and sender connector. Connect one red lead of J33431B tester to TAN (31) wire at fuel pump oil pressure switch and sender connector and other lead to ground. Set resistance dials to 0 ohms and then to 90 ohms. The oil pressure gage should indicate low pressure and then high pressure.	Oil pressure gage indicates correctly.	REPLACE fuel pump oil pressure switch and sender.
	Oil pressure gage does not indicate correctly.	LOCATE and REPAIR open in TAN (31) wire between fuel pump oil pressure switch and sender connector and instrument cluster connector. If wire is good, REPLACE oil pressure gage.

OIL PRESSURE GAGE INDICATES LOW PRESSURE WHEN OIL PRESSURE IS GOOD

TEST	RESULT	ACTION
1. Disconnect fuel pump oil pressure switch and sender connector and place ignition switch in RUN.	Oil pressure gage indicates high pressure.	REPLACE fuel pump oil pressure switch and sender.
	Oil pressure indicates no or low pressure.	LOCATE and REPAIR short in TAN (31) wire between fuel pump oil pressure switch and sender connector and instrument cluster connector. If wire is good, REPLACE oil pressure gage.

OIL PRESSURE GAGE INDICATES HIGH PRESSURE AT ALL TIMES

TEST	RESULT	ACTION
1. Disconnect fuel pump oil pressure switch and sender connector and place ignition switch in RUN. Connect fused jumper from TAN (31) wire at fuel pump oil pressure switch and sender connector to ground.	Oil pressure gage indicates low pressure or indicator lights.	REPLACE fuel pump oil pressure switch and sender.
	Oil pressure gage indicates high pressure or indicator does not light.	LOCATE and REPAIR open in TAN (31) wire between fuel pump oil pressure switch and sender connector and instrument cluster connector. If wire is good, REPLACE oil pressure gage.

VOLTMETER IS NOT ACCURATE

TEST	RESULT	ACTION
1. Place ignition switch in RUN position. Connect voltmeter between positive and negative terminals of the battery.	Voltage reading is approximately the same as vehicle's voltmeter.	Voltmeter is good.
	Voltage reading is different from vehicle's voltmeter.	LOCATE and REPAIR open in PNK (39) wire and BLK (150) wire at instrument cluster. If wires are good, REPLACE voltmeter.

INSTRUMENT CLUSTER: WITH GAGES
**LOW COOLANT LEVEL INDICATOR DOES NOT LIGHT WITH COOLANT LEVEL LOW
(DIESEL ONLY)**

TEST	RESULT	ACTION
1. Disconnect low coolant level sensor connector and place ignition switch in RUN. Observe engine coolant level indicator light.	Engine coolant level indicator lights.	REPLACE low coolant level sensor.
	Engine coolant level indicator does not light.	GO to step 2.
2. Disconnect low coolant level indicator module connector. Connect voltmeter from PNK (39) wire at low coolant level indicator module connector to ground.	Battery voltage.	GO to step 3.
	No voltage.	LOCATE and REPAIR open in PNK (39) wire between fuse block and low coolant level indicator module connector.
3. Connect voltmeter from PNK (39) wire to BLK (150) wire at low coolant level indicator module connector.	Battery voltage.	GO to step 4.
	No voltage.	LOCATE and REPAIR open in BLK (150) wire between low coolant level indicator module connector and instrument ground.
4. Connect voltmeter from GRY (69) wire at low coolant level indicator module connector C248 to ground.	Battery voltage.	GO to step 5.
	No voltage.	LOCATE and REPAIR open in GRY (69) wire between low coolant level indicator module connector and instrument cluster connector.
5. Reconnect low coolant level sensors, Connect voltmeter from PNK (39) wire to YEL/BLK (68) at low coolant level indicator module connector.	Battery voltage.	LOCATE and REPAIR short to ground in YEL/BLK (68) wire between low coolant level indicator module connector and low coolant level sensor connector.
	No voltage.	REPLACE low coolant level indicator module.

**LOW COOLANT LEVEL INDICATOR IS LIT WHEN COOLANT LEVEL IS GOOD
(DIESEL ONLY)**

TEST	RESULT	ACTION
1. Connect fused jumper from low coolant level sensor connector to ground. Place ignition switch in RUN and observe engine coolant level indicator light.	Engine coolant level indicator goes out.	REPLACE low coolant level sensor.
	Engine coolant level indicator stays lit.	LOCATE and REPAIR open in YEL/BLK (68) wire between low coolant level sensor connector and low coolant level indicator module connector. If wire is good, LOCATE and REPAIR short to ground in GRY (65) WIRE follow diagnostic procedures listed under symptom "Low Coolant Level Indicator Does Not Light With Coolant Level Low."

INSTRUMENT CLUSTER: WITH GAGES

CIRCUIT OPERATION

FUEL GAGE

The pointer of the Fuel Gage is moved by the magnetic fields of two coils. The coils are at right angles to each other. Battery voltage is applied to the E-coil and the circuit divides at the opposite end of the coil. One path continues to ground through the F-coil. Another goes to ground through the variable resistor of the Fuel Gage Sender.

When the tank is low, the resistance of the Sender is low. A large flow of current passes through the E-coil and the Fuel Gage Sender resistor. This moves the pointer toward E on the scale. When the tank is full, the Sender resistance is high. More current now flows through the F-coil, moving the pointer toward F on the scale.

With two coils operating the pointer, the Gage is not affected by changes in the system's battery voltage.

OIL PRESSURE GAGE

The engine oil pressure is displayed by the Oil Pressure Gage. The pointer of the Gage is moved by two coils, and its operation is similar to that of the Fuel Gage.

The Oil Pressure Sender is connected to the junction of the two coils. It has low resistance when the oil pressure is low, and high ohms resistance when the oil pressure is high. This changing resistance changes the current flow through the coils. The magnetic fields of the coils move the pointer from low to high.

TEMPERATURE GAGE

The Temperature Gage is also operated by two coils. Battery voltage is applied to both coils. One is grounded directly and the other is grounded through the Engine Temperature Sender. This has 55 ohms resistance at 123°C (260°F) (hot coolant) and its resistance becomes greater at low temperatures. It is approximately 1400 ohms at 47°C (100°F). This causes the current through the Sender to increase as the coolant temperature increases which moves the pointer.

VOLTMETER

The Voltmeter measures the electrical system's voltage with the Ignition Switch in RUN or START. With the engine stopped, the Voltmeter indicates Battery condition. With the engine running, the Voltmeter indicates Charging System operation.

ENGINE COOLANT LEVEL INDICATOR

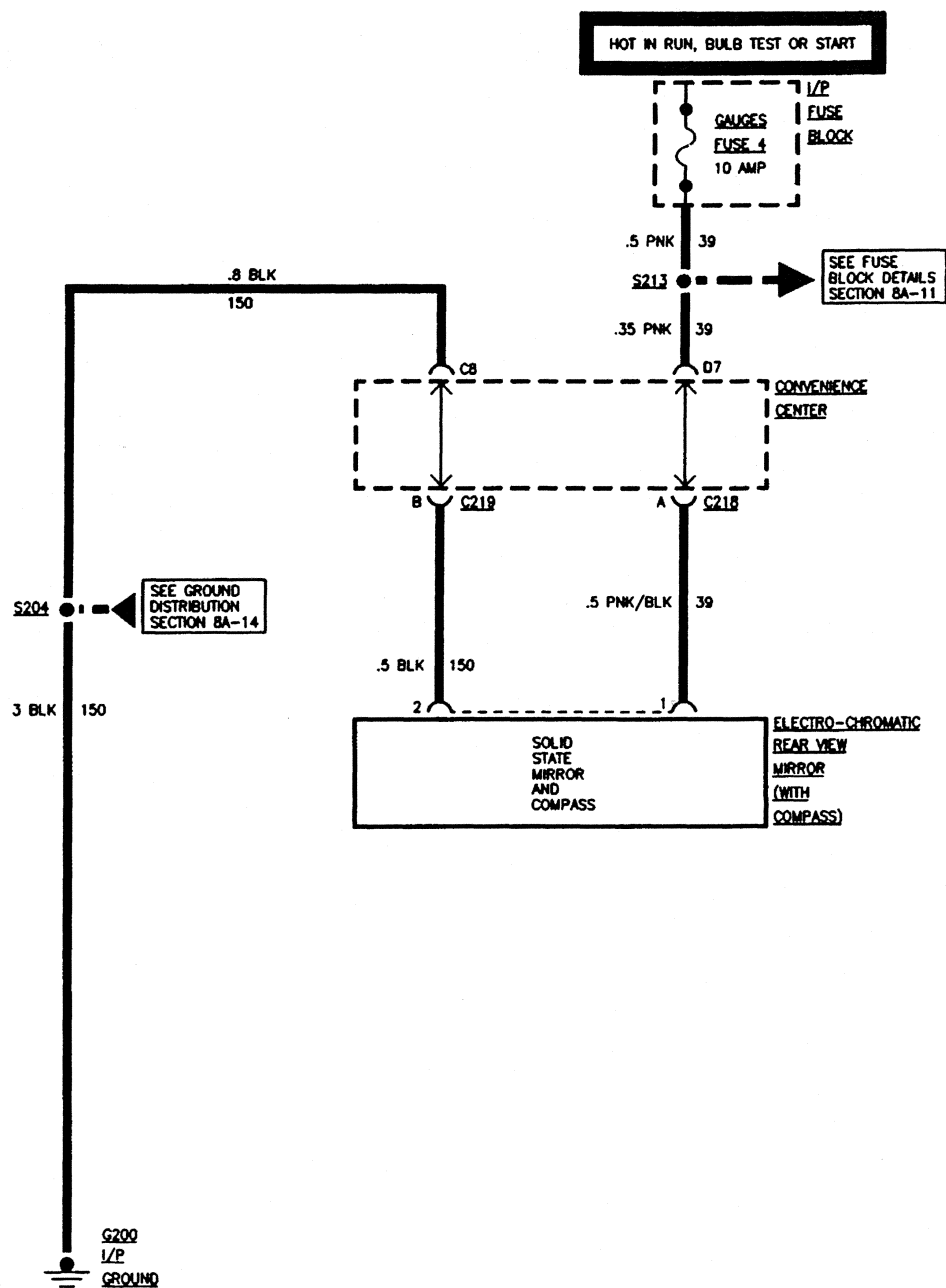
The Engine Coolant Level Indicator comes on to warn the driver when a low level of coolant exists in the radiator. Battery voltage is applied to the Engine Coolant Level Indicator Module. When a low coolant condition exists, a signal is sent to the Engine Coolant Level Indicator Module from the Engine Coolant Level Sensor. The Engine Coolant Level Indicator Module will provide a ground to the Engine Coolant Level Indicator.

The Engine Coolant Level Sensor is not a switch that opens and closes. It has a very high resistance to ground, more than 50,000 ohms, when the engine coolant level is low. This causes the Engine Coolant Level Indicator Module to illuminate the Engine Coolant Level Indicator. With more of the Sensor covered by coolant, its resistance decreases. When the fluid level is good, the resistance will be less than 10,000 ohms. With the Sensor resistance between 10,000 and 50,000 ohms, the Sensor is partly covered and the fluid is not low enough to cause the warning to be displayed.

SHIFT INDICATOR

With Manual Transmission, the SHIFT Indicator illuminates when the vehicle should be shifted to the next higher gear for better fuel economy. Battery voltage is applied to one side of the bulb. The other side of the bulb is switched to ground by the ECM which uses engine data such as rpm, vehicle speed and intake manifold vacuum to compute an efficient shift point.

ELECTROCHROMATIC REARVIEW MIRROR WITH COMPASS



COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	.....	41
Electronic Rear View Mirror With Compass	On top side of windshield	39	.....	46
Fuse Block - I/P Harness	Lower LH side of I/P	26	.....	31
CONNECTORS:				
C218	At convenience center	39	.....	46
C219	At convenience center	39	.....	46
GROUND:				
G200	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S213	I/P harness, approx. 16 cm right of fuse block breakout			
S213 (Crew Cab, VIN F)	I/P harness approx. 16 cm right of breakout for LH door jamb switch			
S213 (Diesel)	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout			

DIAGNOSIS - ELECTRONIC COMPASS, ELECTROCHROMATIC MIRROR

TROUBLESHOOTING HINTS:

1. Check GAUGES fuse. If fuse is blown, locate and repair source of overload, recheck fuse.

ELECTRONIC COMPASS, ELECTROCHROMATIC MIRROR - INOPERATIVE DISPLAY

TEST	RESULT	ACTION
1. Disconnect rearview mirror connector. Place test lamp from PNK/BLK (39) wire at rearview mirror connector to ground place ignition. switch in RUN.	Test lamp lights.	Go to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in PNK/BLK (39) wire between rearview mirror connector and fuse block.
2. Place test lamp from PNK/BLK (39) wire to BLK (150) wire at rearview mirror connector.	Test lamp lights.	REPLACE rearview mirror.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire and between rearview mirror connector and ground.

ELECTRONIC COMPASS ELECTROCHROMATIC MIRROR CIRCUIT OPERATION

ELECTROCHROMATIC REARVIEW MIRROR

The electrochromatic rearview mirror dims to a level required to minimize glare while still maintaining maximum rear vision.

The mirror switch has three positions; OFF, M and C/M. The M position energizes the mirror only while the C/M position energizes both the mirror and the compass.

When a situation requires, the electronic module within the mirror assembly reduces the reflectivity of the rearview mirror and automatically dims the LED compass readout.

COMPASS DISPLAY

The Compass Display circuitry is entirely contained within the Rearview Mirror.

The compass display is located on the mirror. It presents directional displays relative to symbolic horizon lines and road lines.

The electronic compass includes a fluxgate magnetic field sensor and a microprocessor. The microprocessor receives inputs from the sensor, processes them and provides outputs to the compass display which indicates the vehicle heading, relative to the Earth's magnetic fields.

SETTING THE COMPASS ZONE

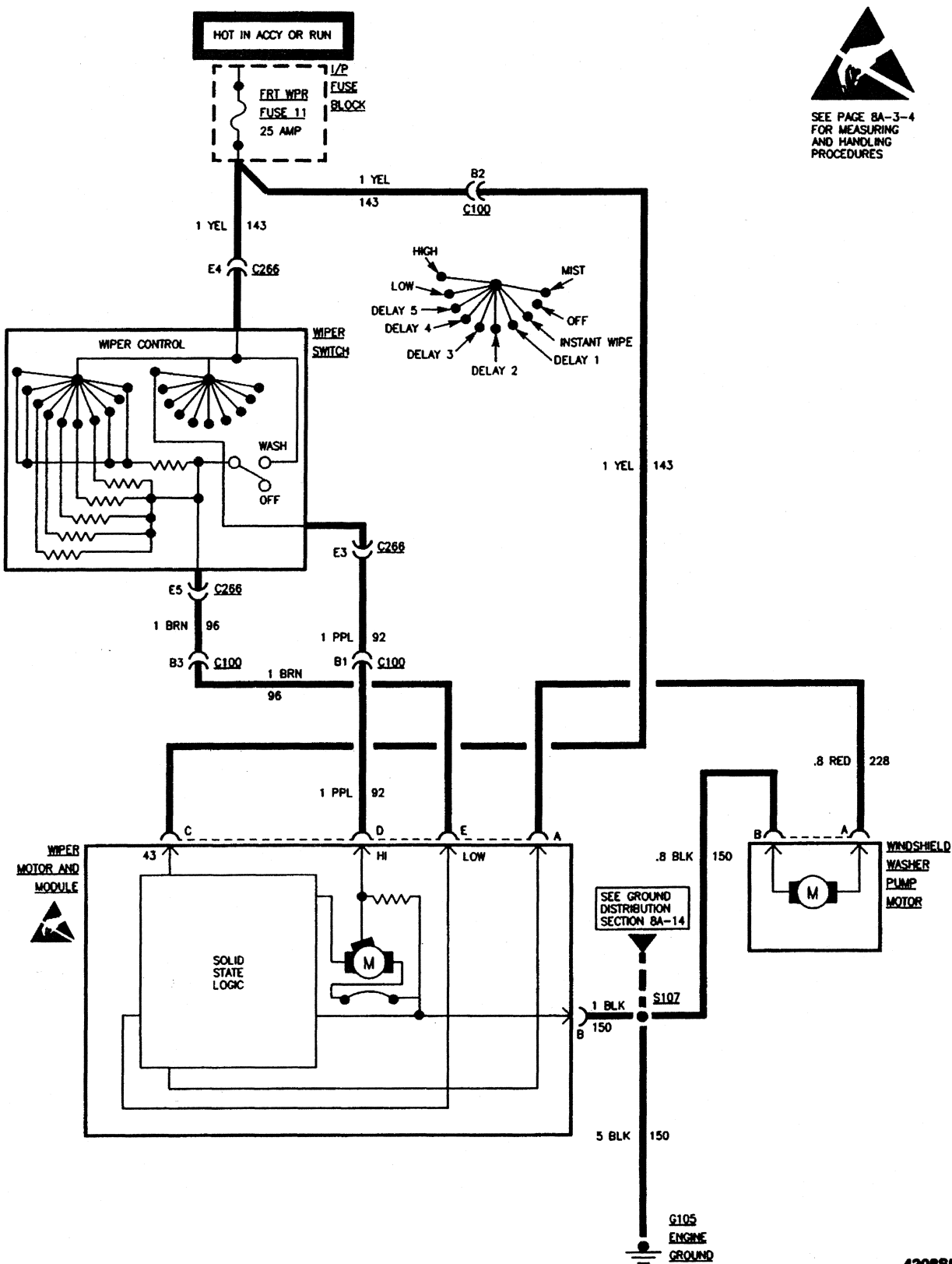
To set the compass to the proper zone, first determine the correct zone for your location by referring to Figure 1. Once the correct zone is determined, display the compass zone setting by pressing the calibrate switch in the mirror. The calibrate switch can be pressed by inserting the end of a paper clip in the hole on the bottom of the mirror. Continue to press and hold the calibrate switch for five seconds until the zone number appears in the display. When the zone setting is displayed it can be changed by again pressing the calibrate switch, until the correct zone appears. Once the correct zone appears, stop pressing the calibrate switch and the display will show compass direction within a few seconds. The zone setting will not be lost when the mirror and the ignition are turned off. The zone should require resetting only when the vehicle is outside of the Zone for which it is set.

The compass in the mirror is an "autocal" compass. This means the mirror will automatically calibrate itself so that the unique magnetic fields in each vehicle do not cause the mirror to display the wrong direction. When the compass is calibrating a "C" will be displayed. The mirror will calibrate itself during your normal driving routine. When calibration is complete the "C" in the display will change to the correct directional heading. Once the mirror is calibrated it will not normally need to be recalibrated. If it does need to be recalibrated it will occur automatically without any input from the driver. Turning the mirror or the vehicle off will not cause the calibration to be lost. If desired, the compass can be manually recalibrated as follows:

1. If the "C" is already being displayed, simply drive the vehicle slowly (5 mph or less) in a 360 degree circle until the display reads a compass direction. This will probably calibrate the compass quicker than it would calibrate automatically.
2. If the "C" is not already being displayed turn the vehicle ignition on and the compass mirror on. Depress the calibrate switch by inserting the end of a paper clip in the hole on the bottom of the mirror and hold it for 10 seconds until the letter "C" appears in the display. The display will show a number first, but keep holding it until the letter "C" appears. Once the letter "C" appears in the display, drive the vehicle slowly (5 mph or less) in a 360 degree circle until the display reads a compass direction.

BLANK

WIPER/WASHER: PULSE



WIPER/WASHER: PULSE

COMPONENT	LOCATION	201-PG	FIG.	CONN
Fuse Block.....	Lower LH side of I/P	26.....	31	
Windshield Washer Pump (Front & Rear).....	At washer reservoir	7.....	10	
Wiper/Washer Switch	Part of multi-function switch, LH upper steering column			
Wiper Motor and Module.....	Center rear engine compartment, at cowl			
CONNECTORS:				
C100.....	Engine harness, inline to I/P harness	7.....	10	
C266.....	LH side of steering column, near bulkhead.....	26.....	31	
GROUND:				
G105 (VIN P)	RH top rear of cylinder head.....	15.....	18	
G105 (VIN Z H K)	RH front wheelhouse	1.....	4	
SPLICES:				
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout			

DIAGNOSIS - WIPER/WASHER: PULSE**TROUBLESHOOTING HINTS:**

1. Check condition of FRT WIPER Fuse #11. If fuse is blown, locate and repair source of overload. Replace fuse.
2. Check for proper mechanical operation. Repair binding linkage prior to electrical diagnosis.

WIPERS DO NOT OPERATE IN ANY MODE

TEST	RESULT	ACTION
1. Disconnect wiper switch connector. Connect test lamp from Conn C266 Term 'E4' at wiper/washer switch connector to ground. Place ignition switch in RUN.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in CKT (143) wire from wiper/washer switch connector to fuse block.
2. Connect wiper/washer switch connector. Position switch in LO. Connect test lamp from BRN (96) wire at wiper/washer switch connector to ground.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	REPLACE wiper/washer switch.
3. Check continuity of BRN (96) wire between wiper/washer switch connector and wiper motor and module connector.	Continuity.	GO to step 4.
	No continuity.	LOCATE and REPAIR open in BRN (96) wire between wiper/washer switch connector and wiper motor and module connector.

8A - 91 - 2 ELECTRICAL DIAGNOSIS**WIPER/WASHER: PULSE**

TEST	RESULT	ACTION
4. Check continuity of BLK (150) wire between wiper motor and module connector and ground.	Continuity.	REPLACE wiper motor and module.
	No continuity.	LOCATE and REPAIR open in BLK (150) wire between wiper motor and module connector and ground.

WIPERS DO NOT OPERATE AT HIGH SPEED

TEST	RESULT	ACTION
1. Disconnect wiper motor and module connector. Place ignition switch in ACC and wiper switch in HI position. Connect test lamp from PPL (92) wire at wiper motor and module connector to ground.	Test lamp lights.	REPLACE wiper motor and module.
	Test lamp does not light.	GO to step 2.
2. Connect test lamp from PPL (92) wiper/washer switch connector to ground.	Test lamp lights.	LOCATE and REPAIR open in PPL (92) wire from wiper/washer switch connector to wiper motor and module connector.
	Test lamp does not light.	REPLACE wiper/washer switch.

WIPERS DO NOT OPERATE AT LOW SPEED

TEST	RESULT	ACTION
1. Disconnect wiper motor and module connector. Place ignition switch in ACC and wiper/washer switch in LO position. Connect test lamp from BRN (96) wire at wiper motor and module connector to ground.	Test lamp lights.	REPLACE wiper motor and module.
	Test lamp does not light.	GO to step 2.
2. Connect test lamp from BRN (96) wire at wiper/washer switch connector to ground.	Test lamp lights.	LOCATE and REPAIR open in BRN (96) wire from wiper/washer switch connector to wiper motor and module connector.
	Test lamp does not light.	REPLACE wiper/washer switch.

NO DELAY IN THE PULSE (DELAY) MODE

TEST	RESULT	ACTION
1. Disconnect wiper/washer switch connector. Place wiper switch to LO position. Connect ohmmeter from BRN (96) wire terminal to YEL (143) wire terminal at wiper switch.	A reading of approximately 680 ohms.	GO to step 2.
	A reading of less than or greater than 680 ohms.	REPLACE wiper/washer switch.
2. Move wiper switch through delay range to maximum delay position.	Readings increase in steps to approximately 450 k ohms.	LOCATE and REPAIR open in BRN (96) wire or YEL (143) wire from wiper/washer switch connector to wiper motor and module. If wires are good, REPLACE wiper/washer switch.
	Readings are incorrect.	REPLACE wiper switch.

WIPER/WASHER: PULSE**WIPERS WILL NOT SHUT OFF**

TEST	RESULT	ACTION
1. Disconnect wiper/washer motor module connector. Place ignition switch in ACC and wiper switch to LO position. Connect test lamp from BRN (96) wire at wiper motor and module connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (96) wire from wiper motor and module connector to wiper/washer switch connector.
2. Move wiper switch to HI position. Connect test lamp from PPL (92) wire at wiper motor and module connector to ground.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	LOCATE and REPAIR open in PPL (92) wire from wiper motor and module connector to wiper/washer switch connector.
3. Connect test lamp from YEL (143) wire at wiper motor and module connector to ground.	Test lamp lights.	REPLACE wiper motor and module.
	Test lamp does not light.	LOCATE and REPAIR open in YEL (143) wire from wiper motor and module connector to ground.

WASHER WILL NOT OPERATE

TEST	RESULT	ACTION
1. Disconnect washer pump motor connector. Place ignition switch to ACC and wiper switch to WASH. Connect test lamp from RED (228) wire at washer pump motor connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	GO to step 3.
2. Connect test lamp from RED (228) wire to BLK (150) wire at washer pump motor connector.	Test lamp lights.	REPLACE washer pump motor.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire from washer pump motor connector to ground.
3. Connect test lamp from BRN (96) wire at wiper motor module connector to ground.	Test lamp lights.	REPLACE wiper motor and module.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (96) wire from wiper motor module connector to wiper switch connector. If wire is good, REPLACE wiper switch.

CIRCUIT OPERATION**WIPERS (PULSE)**

The pulse-type Wiper/Washer System includes an operating mode in which the wipers make single strokes with an adjustable time interval between strokes. The time interval is controlled by a Solid-State Pulse/Speed/Wash Control in the Wiper Motor Module. The duration of the relay interval is determined by the Pulse Delay Resistance in the Wiper/Washer Switch.

LOW SPEED

In the LO position, the Wiper/Washer Switch supplies voltage to the BRN (96) wire and the Pulse/Speed/Wash Control. The Pulse/Speed/Wash Control provides ground to

the Park/Run Relay which is energized and supplies voltage to the brushes of the Wiper Motor. The wipers run at low speed until they are turned off.

HIGH SPEED

With the Wiper/Washer Switch in the HI position, battery voltage is supplied from the PPL (92) wire directly to a second armature terminal of the Wiper Motor. The wipers run at high speed. When the Wiper/Washer Switch is turned to OFF, the wipers complete the last sweep at low speed and park.

PARK

When the wipers are turned off, the Wiper Motor runs at low speed until the wiper blades reach the PARK

WIPER/WASHER: PULSE

position. At that time the Park/Run Relay opens and shunts the Wiper Motor to stop it immediately. The wiper blades remain in the PARK position.

MIST

When the control is moved to MIST and released, the wipers make one sweep at low speed and return to PARK. The circuit operation is the same as low speed.

PULSE

With the Wiper/Washer Switch in PULSE (Delay), voltage is applied to the BRN (96) wire, the Wiper Motor Module and the Solid-State Control Board. Voltage is supplied to the Park/Run Relay coil which is momentarily grounded by the Pulse/Speed/Wash Control circuit and the relay closes. Battery voltage is supplied through the closed contacts of the relay to run the Wiper Motor. The relay remains energized as long as the contacts of the Park/Run Switch remain closed. When the wiper blades have reached PARK, the Park/Run Switch opens, de-energizing the Park/Run Relay. The wiper blades remain in PARK until the Control Board grounds the Park/Relay coil to start another sweep. The delay time between sweeps is controlled by the pulse delay resistors. The delay can be adjusted from 0 to 43 seconds.

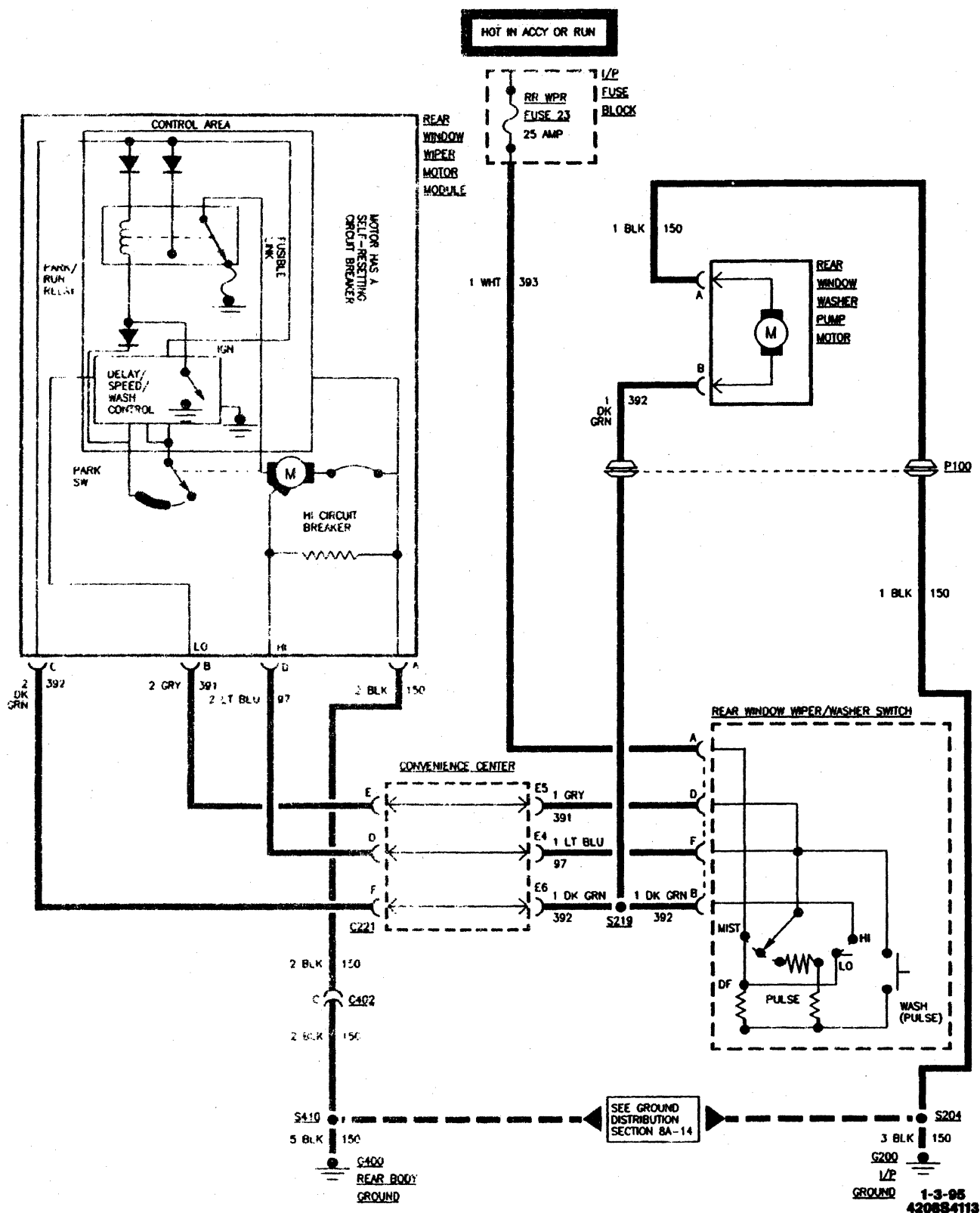
WASHER (PULSE WIPER)

When the Washer Switch is depressed, voltage is supplied to the Solid-State Control Board. The Control Board supplies battery voltage to the Washer Motor through the RED (228) wire. It also starts the wiper cycle through the low speed brushes of the Wiper Motor. The washer continues to run as long as the switch is held down. The Solid-State Control Board keeps the wipers on for approximately six seconds after the washer goes off. If the washer is switched on during the PULSE operation, the wipers run in low speed for six seconds. The wash cycle is completed before the wipers return to the delayed pulse operation.

The Wiper Motor is equipped with a circuit breaker which protects the motor when the wipers are blocked. The resulting high current will open the circuit breaker which will reset upon cooling.

BLANK

REAR WIPER/WASHER



REAR WIPER/WASHER

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P Harness	Under LH side of I/P.....	34.....	41	
Fuse Block - I/P Harness	Lower LH side of I/P.....	26.....	31	
Rear Window Washer Pump Motor.....	At washer reservoir			
Rear Window Wiper/Washer Switch.....	Center of I/P.....	35.....	42	
Rear Window Wiper/Washer Module.....	On lower rear liftgate glass			
Rear Window Washer Pump Motor.....	At washer reservoir			
CONNECTORS:				
C221.....	At convenience center.....	34.....	41	
C402.....	Top center rear of vehicle			
GROMMETS:				
P100	LH rear of engine compartment at bulkhead.....	7.....	10	
GROUND:				
G200.....	Behind LH side of I/P, below fuse block			
G400.....	RH "B" pillar.....	41.....	49	
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S219 (Suburban, Utility).....	Approx. 22 cm from RR window release switch connector			
S410 (2-Door Utility)	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			
S410 (4-Door Utility)	Front to rear lamps harness, 22 cm from RH rear door speaker breakout			
S410 (Suburban).....	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			

DIAGNOSIS - REAR WIPER/WASHER**TROUBLESHOOTING HINTS:**

1. Check RRWPR Fuse by visual inspection.
2. Check for mechanical binding.
 - Refer to Section 8E2 for Rear Window Wiper/Washer System mechanical diagnosis.
 - Check for a broken(or partially broken) wire inside of the insulation which could cause system failure

- but prove "GOOD" in a continuity/voltage check (see "Troubleshooting Procedures," page 8A-4-0).
- Check for proper installation of aftermarket electronic equipment which may effect the integrity of other systems(see "Troubleshooting Procedures," page 8A-4-0).

REAR WIPER/WASHER**REAR WIPER DOES NOT OPERATE IN ANY MODE**

TEST	RESULT	ACTION
1. Disconnect Rear Window Wiper/Washer Switch. Place Ignition Switch in "RUN." Connect a test lamp from terminal "A" to ground.	Lamp lights.	GO to step 2.
	Lamp does not light.	REPAIR open in CKT 393.
2. Disconnect Rear Window Wiper Motor Module. Connect a test lamp from terminal "B" with switch in "LO" and Terminal "D" with switch in "HI."	Lamp lights.	GO to step 3.
	Test lamp does not light at one or both terminal inals.	Check/Repair CKT 391(LO) and CKT 97(HI). If OK, replace Rear Window Wiper/Washer Switch.
3. Connect a test lamp at Rear Window Wiper Motor Module terminal "A" to battery positive.	Lamp lights.	Replace module.
	Lamp does not light.	REPAIR open in CKT 150.

REAR WIPER DOES NOT OPERATE AT HIGH SPEED

TEST	RESULT	ACTION
1. Place ignition switch in "RUN." Connect a test lamp at Rear Window Wiper/Washer Switch terminal "B" to ground. Move switch to "HI."	Lamp lights.	GO to step 2.
	Lamp does not light.	REPLACE Rear Wiper/Washer Switch.
2. Disconnect Rear Window Wiper Motor Module. Connect a test lamp from terminal "D" to ground. Move switch to "HI."	Lamp lights.	REPLACE Rear Wiper/Washer Module.
	Lamp does not light.	Repair open in CKT 97.

REAR WIPER DOES NOT OPERATE AT LOW OR PULSE SPEED

TEST	RESULT	ACTION
1. Place Ignition Switch in "RUN." Connect a test lamp at Rear Window Wiper/Washer Switch terminal "D" to ground. Move switch to "LO."	Lamp lights.	GO to step 2.
	Lamp does not light.	REPLACE Rear Wiper Switch.
2. Disconnect Rear Window Wiper Motor Module. Connect a test lamp from terminal "B" to ground. Move wiper switch to "LO."	Lamp lights.	REPLACE wiper/washer module.
	Lamp does not light.	Repair open in CKT 391.

REAR WINDOW WIPER WILL NOT SHUT OFF OR PARK

TEST	RESULT	ACTION
1. Place ignition switch in "RUN." Connect a test lamp at Rear Window Wiper/Washer switch terminal "D" to ground.	Test lamp lights.	REPLACE rear wiper/washer switch.
	Test lamp does not light.	GO to step 2.
2. Disconnect Rear Window Wiper Motor Module. Connect a test lamp from terminal "A" to battery positive.	Test lamp lights.	REPLACE rear wiper motor and module.
	Test lam does not light.	REPAIR open in CKT 150.

REAR WIPER/WASHER**REAR WINDOW WASHER INOPERATIVE**

TEST	RESULT	ACTION
1. Place ignition switch in "RUN." Connect a test lamp at Rear Window Wiper/Washer switch terminal "B" to ground. Press rear window washer switch.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	REPLACE rear wiper/washer switch.
2. Disconnect Rear Window Washer Pump Motor connector. Connect a test lamp from terminal "B" to ground. Press rear window washer switch.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	REPAIR open in CKT 392.
3. Connect test lamp from DK GRN (392) wire to BLK (150) wire at rear washer pump motor connector.	Test lamp lights.	REPLACE rear washer pump.
	Test lamp does not light.	REPAIR open in CKT 150.

CIRCUIT OPERATION**PULSE REAR WIPER/WASHER**

Voltage to the Rear Wiper/Washer is supplied through the CKT 393 with the Ignition Switch in ACC or RUN.

WIPER

In addition to the features of a conventional (non-pulse) Wiper System (MIST, LO and HI speeds), the Rear Pulse Wiper/Washer System includes an operating mode in which the wiper makes single strokes with an adjustable time interval between strokes. The time interval is controlled by a Solid-State Pulse/Speed/Wash Control in the Wiper Motor Module. The duration of the relay interval is determined by the Pulse Delay Resistance in the Wiper/Washer Switch.

In the LO position, the Wiper/Washer Switch supplies voltage to the Pulse/Speed/Wash Control through CKT 391. The Pulse/Speed/Wash Control provides ground to the Park/Run Relay which is energized and supplies voltage to the brushes of the Wiper Motor. The wipers run at low speed until they are turned off.

With the Wiper/Washer Switch in the HI position, battery voltage is supplied from CKT 392 directly to a second armature terminal of the Wiper Motor. The wiper runs at high speed. When the Wiper/Washer Switch is turned to OFF, the wiper completes the last sweep at low speed and park.

When the wiper is turned off, the Wiper Motor runs at low speed until the wiper blade reaches the PARK position. At that time the Park/Run Relay opens and shunts the Wiper Motor to stop it immediately. The wiper blade remains in the PARK position.

When the control is moved to MIST and released, the wiper makes one sweep at low speed and return to PARK. The circuit operation is the same as low speed.

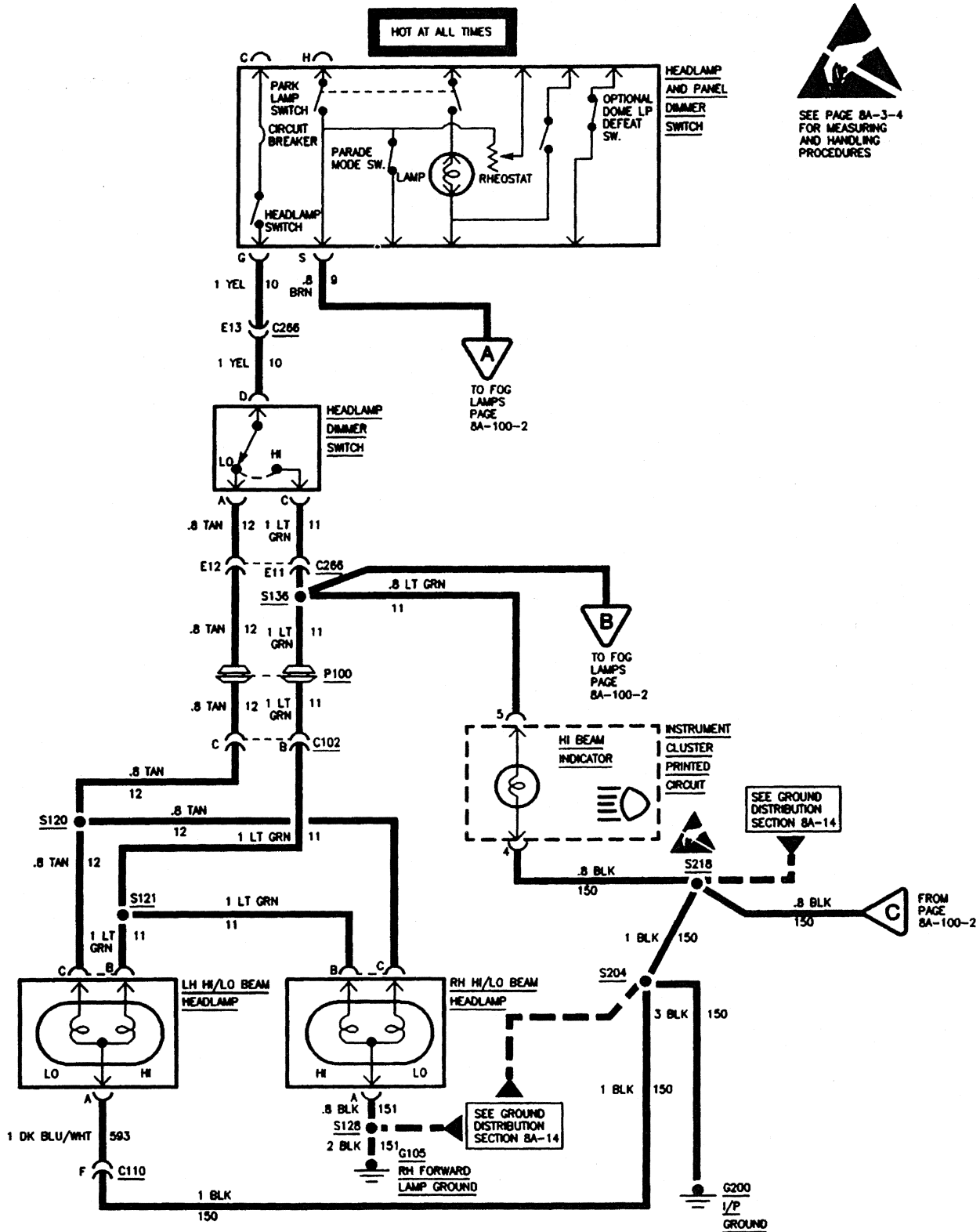
With the Wiper/Washer Switch in PULSE, voltage is supplied to the Wiper Motor Module through CKT 391. Voltage is supplied to the Park/Run Relay coil which is momentarily grounded by the Pulse/Speed/Wash Control circuit and the relay closes. Battery voltage is supplied by CKT 97 through the closed contacts of the Relay to run the Wiper Motor at LO speed. The relay remains energized as long as the contacts of the Park/Run Switch remain closed. When the wiper blade reaches PARK, the Park/Run Switch opens, de-energizing the Park/Run Relay. The wiper blade remains in PARK until the Control Board grounds the Park/Relay coil to start another sweep. The delay time between sweeps is controlled by the pulse delay resistors. The delay can be adjusted from 0 to 43 seconds.

WASHER

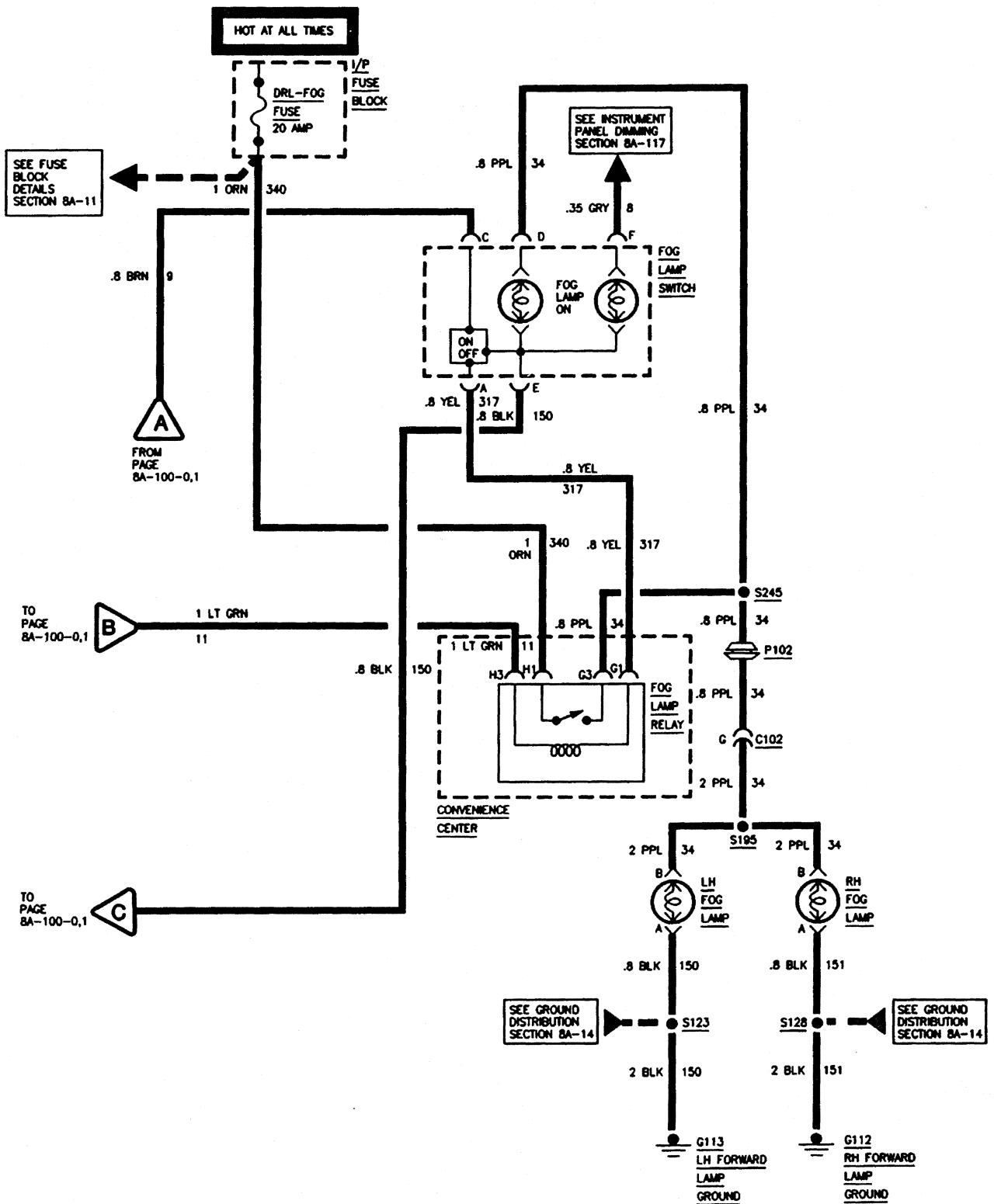
When the Washer Switch is depressed, voltage is supplied to the Solid-State Control Board in the Wiper Control Module. The Wiper Switch supplies battery voltage to the Washer Motor through CKT 392. It also starts the wiper cycle through the low speed brushes of the Wiper Motor. The washer continues to run as long as the switch is held down. The Solid-State Control Board keeps the wipers on for approximately six seconds after the washer goes off. If the washer is switched on during the PULSE operation, the wipers run in low speed for six seconds. When the wash cycle is completed the Wipers return to the pulse operation.

The Wiper Motor is equipped with a circuit breaker which protects the motor when the wipers are blocked. The resulting high current will open the circuit breaker which will reset upon cooling.

HEADLAMPS AND FOG LAMPS BASE



HEADLAMPS AND FOG LAMPS



HEADLAMPS AND FOG LAMPS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center I/P Harness	Under LH side of I/P, on bulkhead	34	41	
Fog Lamp Relay I/P Harness....	Under LH side of I/P, on bulkhead	34	41	
Fog Lamp Switch.....	Center of I/P area.....	35	42	
Fog Lamp, LH	At LH lower end of front bumper.....	0	1	
Fog Lamp, RH	At RH lower end of front bumper	0	1	
Fuse Block.....	Lower LH side of I/P	26	31	
Headlamp (Off/On) & Panel Dimmer Switch.....	Upper LH side of I/P.....	26	31	
Headlamp Dimmer Switch.....	Lower LH side of steering column			
Headlamp, High Beam, LH (Composite).....	LH front of vehicle			
Headlamp, High Beam, RH (Composite).....	RH front of vehicle			
Headlamp, High/Low Beam, LH.....	LH front of vehicle			
Headlamp, High/Low Beam, RH	RH front of vehicle			
Headlamp, Low Beam, LH (Composite).....	LH front of vehicle			
Headlamp, Low Beam, RH (Composite).....	RH front of vehicle			
Instrument Cluster.....	LH upper end of I/P			
CONNECTORS:				
C102.....	LH rear of engine compartment near fuse relay center, mounted on fender.....	4	7	
C110.....	LH rear of engine compartment, below underhood fuse/relay center			
C266.....	LH side of steering column, near bulkhead.....	26	31	
GROUND:				
G112.....	RH front of engine compartment, below underhood reel lamp			
G113.....	On radiator support, near LH headlamp			
G200.....	Behind LH side of I/P, below fuse block			
GROMMETS:				
P102	Behind LH side of I/P, below fuse block			
SPLICES:				
J120	Forward lamps harness, 18 cm left of LH horn breakout			
S121	Forward lamps harness, 12 cm left of LH horn breakout			
S123	Forward lamps harness, 5 cm right of LH horn breakout			

HEADLAMPS AND FOG LAMPS

COMPONENT	LOCATION	201-PG FIG. CONN
S125	Engine compartment, I/P harness, approx. 13 cm from P100	
S128	Forward lamps harness, 5 cm right of RH headlamp breakout	
S138 (VIN F)	Engine harness, 7 cm into generator breakout	
S138 (VIN F)	Engine harness, 7 cm into generator breakout	
S138 (VIN P)	Engine harness, 7 cm into generator breakout	
S204	I/P harness, approx. 4 cm left of steering column connector breakout	
S210	Approx. 15 cm from headlamp dimmer switch connector	
S218	I/P harness, approx. 4 cm right of turn signal flasher	
S245	20 cm from cargo lamp switch	

HEADLAMPS AND FOG LAMPS**DIAGNOSIS - HEADLAMPS AND FOG LAMPS****TROUBLESHOOTING HINTS:**

1. Check condition of DRL-FOG fuse. If fuse is blown, locate and repair source of overload.
 2. Check that grounds G112, G113 and G200 are clean and tight.
 3. Check that the Fog Lamp Relay is securely mounted in the Convenience Center.
 4. Check the LH and RH Low and High Beam filaments.
 5. Check the High Beam Indicator filament.
 6. Check the LH and RH Fog Lamp filaments.
- Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
 - Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

LOW BEAM AND HIGH BEAM HEADLAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
1. Disconnect Headlamp Dimmer Switch. Turn Headlamp Switch to ON. Connect a test lamp from Headlamp Dimmer Switch Connector cavity "D" to ground.	Test lamp lights.	REPLACE Headlamp Dimmer Switch.
	Test lamp does not light.	GO TO step 2.
2. Backprobe Headlamp and Panel Dimmer Switch Connector with a test lamp from cavity "G" to ground.	Test lamp lights.	LOCATE and REPAIR open in YEL (10) wire between Headlamp and Panel Dimmer Switch and Headlamp Dimmer Switch.
	Test lamp does not light.	REPLACE Headlamp and Panel Dimmer Switch.

LOW BEAM HEADLAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
Press Headlamp Switch to ON. Move Headlamp Dimmer Switch to LO position. Backprobe Headlamp Dimmer Switch Connector with a test lamp from cavity "A" to ground.	Test lamp does not light.	REPLACE Headlamp Dimmer Switch
	Test lamp lights.	Test lamp lights. LOCATE and REPAIR open in TAN (12) wire between Headlamp Dimmer Switch and S120.

HIGH BEAM HEADLAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
Press Headlamp Switch to ON. Move Headlamp Dimmer Switch to HI position. Backprobe Headlamp Dimmer Switch Connector with a test lamp from cavity "C" to ground.	Test lamp does not light.	REPLACE Headlamp Dimmer Switch.
	Test lamp lights.	LOCATE and REPAIR open in LT GRN (11) wire between Headlamp Dimmer Switch and S121.

HEADLAMPS AND FOG LAMPS

ONE LOW BEAM OR HIGH BEAM HEADLAMP INOPERATIVE

TEST	RESULT	ACTION
Connect a test lamp from LH/RH Headlamp Connector cavity "B" (QUAD Headlamps) or cavity "A" (BASE Headlamps) to B+.	Test lamp does not light.	LOCATE and REPAIR open in the wiring between affected Headlamp and ground.
	Test lamp lights.	Check for an open in the wiring between affected Headlamp and S120 (for inoperative low beam) or S121 (for inoperative high beam). If OK, REPLACE affected Headlamp.

HIGH BEAM INDICATOR INOPERATIVE

TEST	RESULT	ACTION
1. Disconnect Instrument Cluster Printed Circuit Connector. Connect a test lamp from Instrument Cluster Printed Circuit Connector cavity "4" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Instrument Cluster Printed Circuit and G200.
	Test lamp lights.	GO TO step 2.
2. Turn Headlamp Switch to ON. Move Headlamp Dimmer Switch to HIGH position. Connect a test lamp from Instrument Panel Cluster Printed Circuit Connector cavity "5" to ground.	Test lamp lights.	REPLACE Instrument Cluster.
	Test lamp does not light.	LOCATE and REPAIR open in LT GRN (11) wire between Instrument Cluster Printed Circuit and S136 (BASE Headlamps) or S125 (QUAD Headlamps).

HIGH BEAM HEADLAMPS ON WITH HEADLAMP SWITCH OFF

TEST	RESULT	ACTION
1. Disconnect Headlamp Dimmer Switch Connector. Do High Beam Headlamps turn OFF?	YES	GO TO step 2.
	NO	GO TO step 3.
2. Reconnect Headlamp Dimmer Switch Connector. Disconnect Headlamp and Panel Dimmer Switch Connector. Do High Beam Headlamps turn OFF?	YES	REPLACE Headlamp and Panel Dimmer Switch.
	NO	LOCATE and REPAIR short to voltage in YEL (10) wire between Headlamp Dimmer Switch and Headlamp and Panel Dimmer Switch.
3. Disconnect Instrument Panel Cluster Printed Circuit Connector. Do High Beam Headlamps turn OFF?	YES	REPLACE Instrument Cluster.
	NO	LOCATE and REPAIR short to voltage in LT GRN (11) wire between LH Headlamp, RH Headlamp, Headlamp Dimmer Switch and Instrument Cluster Printed Circuit.

HEADLAMPS AND FOG LAMPS**LOW BEAM HEADLAMPS ON WITH HEADLAMP SWITCH OFF**

TEST	RESULT	ACTION
1. Disconnect Headlamp Dimmer Switch Connector. Do Low Beam Headlamps turn OFF.	NO	LOCATE and REPAIR short to voltage in TAN (12) wire between Headlamp Dimmer Switch and LH Headlamp or RH Headlamp
	YES	GO TO step 2.
2. Reconnect Headlamp Dimmer Switch Connector. Disconnect Headlamp and Panel Dimmer Switch Connector. Do Low Beam Headlamps turn OFF.	YES	REPLACE Headlamp and Panel Dimmer Switch.
	NO	LOCATE and REPAIR short to voltage in YEL (10) wire between Headlamp and Panel Dimmer Switch and Headlamp Dimmer Switch.

FOG LAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
1. Remove Fog Lamp Relay. Connect a test lamp from Fog Lamp Relay cavity "H1" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (340) wire between I/P Fuse Block and Convenience Center.
	Test lamp lights.	GO TO step 2.
2. Connect a fused jumper from Fog Lamp Relay cavity "H1" to "G3".	Fog Lamps do not light.	LOCATE and REPAIR open in PPL (34) wire between Convenience Center and S195.
	Fog Lamps light.	GO TO step 3.
3. Disconnect Fog Lamp Switch Connector. Turn Headlamp Switch to PARK position. Connect a test lamp from Fog Lamp Switch Connector cavity "C" to ground.	Test lamp does not light.	LOCATE and REPAIR open in BRN (9) wire between Headlamp and Panel Dimmer Switch and Fog Lamp Switch.
	Test lamp lights.	GO TO step 4.
4. Connect a test lamp from Fog Lamp Switch Connector cavity "C" to "E".	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Fog Lamp Switch and G200.
	Test lamp lights.	GO TO step 5.
5. Turn Headlamp Switch to OFF. Reconnect Fog Lamp Switch Connector. Turn Headlamp Switch to PARK position. Press Fog Lamp Switch to ON. Backprobe Fog Lamp Switch Connector with a digital multimeter from cavity "A" to ground.	Less than 10.0 volts.	REPLACE Fog Lamp Switch.
	More than 10.0 volts.	GO TO step 6.
6. Connect a digital multimeter from Fog Lamp Relay cavity "G1" to ground. Measure voltage.	Less than 10.0 volts.	LOCATE and REPAIR open in YEL (317) wire between Fog Lamp Switch and Convenience Center.
	More than 10.0 volts.	GO TO step 7.
7. Connect a digital multimeter from Fog Lamp Relay cavity "H3" to B+. Measure voltage.	Less than 10.0 volts.	LOCATE and REPAIR open in LT GRN (11) wire between Convenience Center and S125 (QUAD Headlamps) or S136 (BASE Headlamps).
	More than 10.0 volts.	REPLACE Fog Lamp Relay.

HEADLAMPS AND FOG LAMPS**ONE FOG LAMP INOPERATIVE**

TEST	RESULT	ACTION
1. Connect a test lamp from inoperative Fog Lamp Connector cavity "A" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150/LH, 151/RH) wire between ground (G113/LH, G112/RH) and inoperative Fog Lamp.
	Test lamp lights.	Check for an open in PPL (34) wire between S195 and affected Fog Lamp. If OK, REPLACE inoperative Fog Lamp.

FOG LAMP INDICATOR INOPERATIVE

TEST	RESULT	ACTION
Disconnect Fog Lamp Switch Connector. Connect a test lamp from Fog Lamp Switch Connector cavity "E" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Fog Lamp Switch and G200.
	Test lamp lights.	Check for an open in PPL (34) wire between Fog Lamp Switch and S245. If OK, REPLACE Fog Lamp Switch.

FOG LAMPS REMAIN LIT WITH FOG LAMP SWITCH OFF

TEST	RESULT	ACTION
1. Remove Fog Lamp Relay. Do Fog Lamps turn OFF?	NO	LOCATE and REPAIR short to voltage in PPL (34) wire between Fog Lamp Switch, LH Fog Lamp, RH Fog Lamp and Convenience Center.
	YES	GO TO step 2.
2. Disconnect Fog Lamp Switch Connector. Do Fog Lamps turn OFF?	YES	REPLACE Fog Lamp Switch.
	NO	LOCATE and REPAIR short to voltage in YEL (317) wire between Fog Lamp Switch and Convenience Center.

HEADLAMPS AND FOG LAMPS

CIRCUIT OPERATION

HEADLAMPS

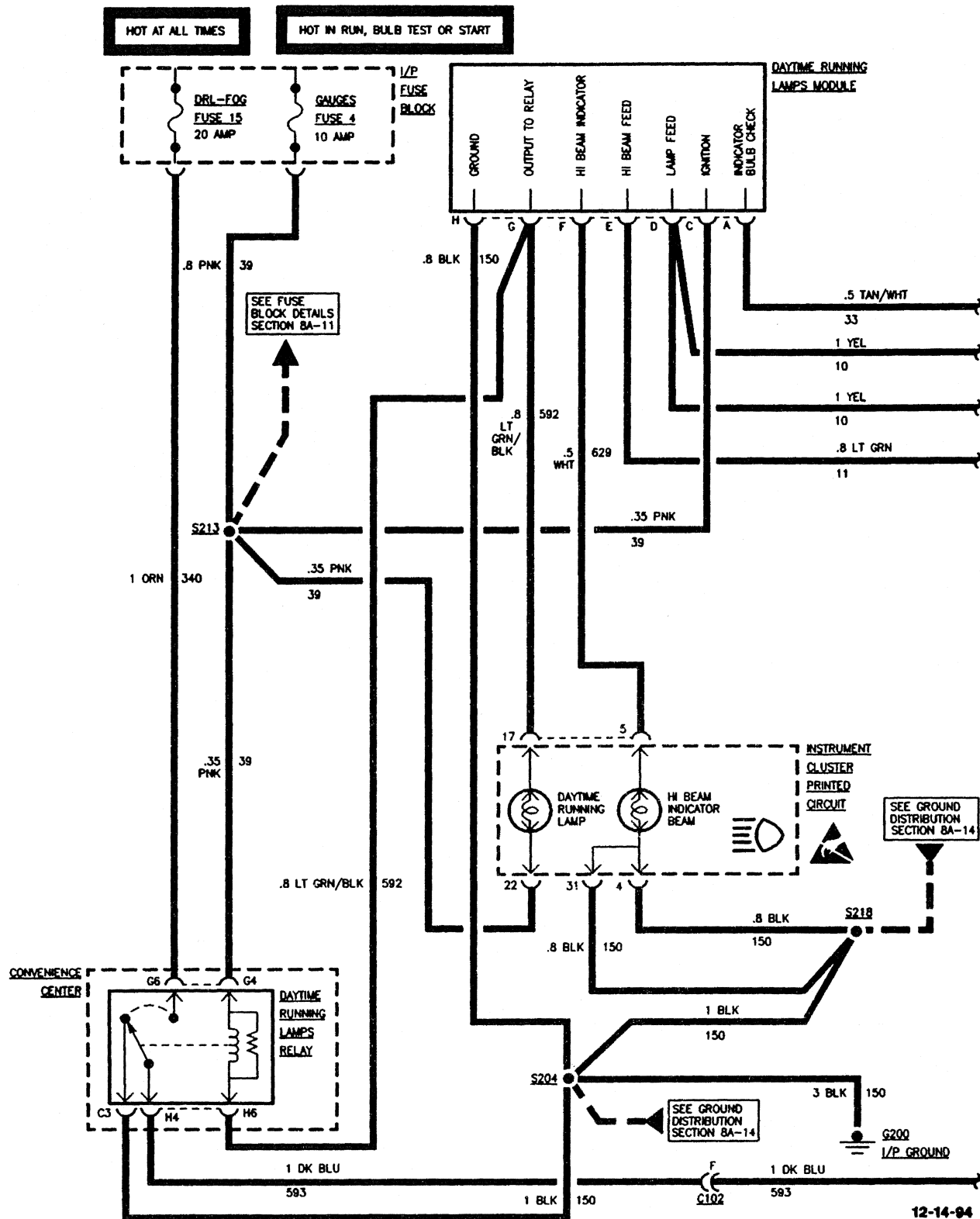
Voltage is supplied to the Headlamp and Panel Dimmer Switch at all times. The Headlight and Panel Dimmer Switch includes a Self-Resetting Circuit Breaker. The Circuit Breaker opens when the Headlight circuit draws too much current. When the Circuit Breaker opens, it interrupts the current flow. With no current flow, the Circuit Breaker cools off and resets automatically. When the Headlamp and Panel Dimmer Switch is in HEAD, the Headlamp and Panel Dimmer Switch directs voltage to either the Low Beams or High Beams. The High Beam (depending on Headlamp Dimmer Switch position). When the Headlamp Switch is in HEAD and the Headlamp Dimmer Switch is in the LO position, voltage is applied through the closed contacts of the Headlamp Switch and the Headlamp Dimmer Switch to the LH and RH Low Beam Headlamps. Since both power and ground are applied to the Low Beam Headlamps, they light. When the Headlamp Dimmer Switch is moved to the HI position with the Headlamp Switch in HEAD, voltage is applied through the closed contacts of the Headlamp Switch and the Headlamp Dimmer Switch to the High Beam Indicator, LH High Beam Headlamp and the RH High Beam Headlamp. Since both power and ground are applied to the High Beam Indicator, and the LH and RH High Beam Headlamps, they light. When the high beam headlamps are energized, the low beam headlamps turn off.

FOG LAMPS

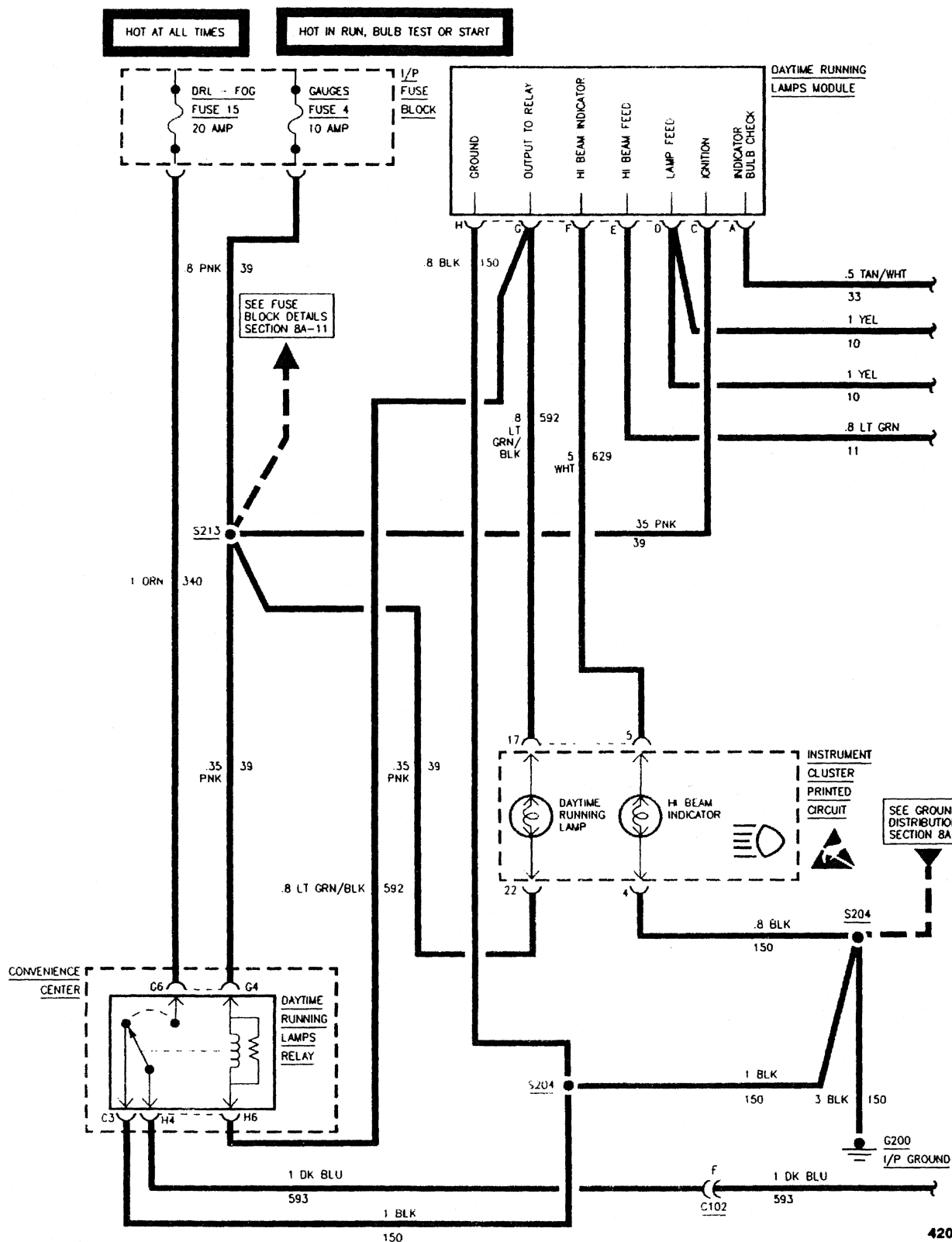
Fog Lamp operation is possible with the Headlamp Switch in the PARK or HEAD position, but if the Headlamp Switch is in the HEAD position the Fog Lamps are only operational if the Headlamp Dimmer Switch is in the LO position.

With the Headlamp Switch in the PARK or HEAD position (if in the HEAD position, Headlamp Dimmer Switch must be in LO position) voltage is applied through the closed contacts of the Headlamp Switch to the Fog Lamp Switch. With the Fog Lamp Switch in the ON position, voltage is applied through the closed contacts of the Fog Lamp Switch to the coil of the Fog Lamp Relay. Voltage is applied to the contact side of the relay through the DRL-FOG FUSE. Ground is supplied to the coil of the Fog Lamp Relay through the High Beam Filaments in the Headlamps and the High Beam Indicator (only if the Headlamp Dimmer Switch is in the LO position). With both power and ground applied to the coil of the Fog Lamp Relay, the relay energizes and voltage is applied through the closed contacts of the relay to the Fog Lamp ON indicator, the LH Fog Lamp and the RH Fog Lamp. With both power and ground applied to the Fog Lamp ON indicator, the LH Fog Lamp and the RH Fog Lamp, they light. If the Headlamp Switch is in the HEAD position, the Fog Lamp Switch in the ON position and the Headlamp Dimmer Switch is moved from the LO to the HI position, then positive (+) battery voltage is applied to the ground side of the Fog Lamp Relay. This will de-energize the Fog Lamp Relay causing the contacts to open, thus eliminating the flow of current to the Fog Lamps and the Fog Lamp ON indicator.

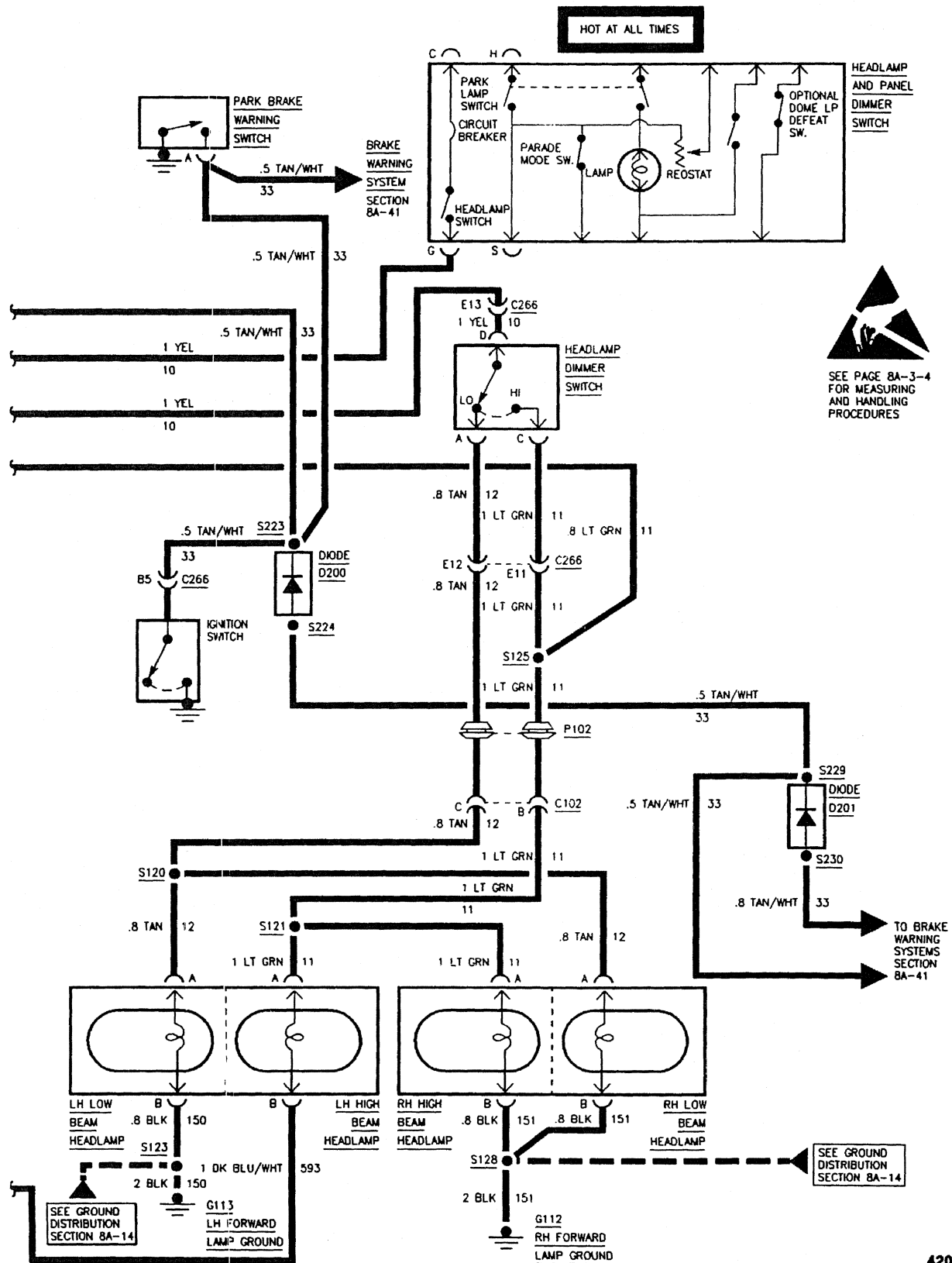
HEADLAMPS: DAYTIME RUNNING LAMPS BASE HEADLAMPS W/O FOGLAMPS



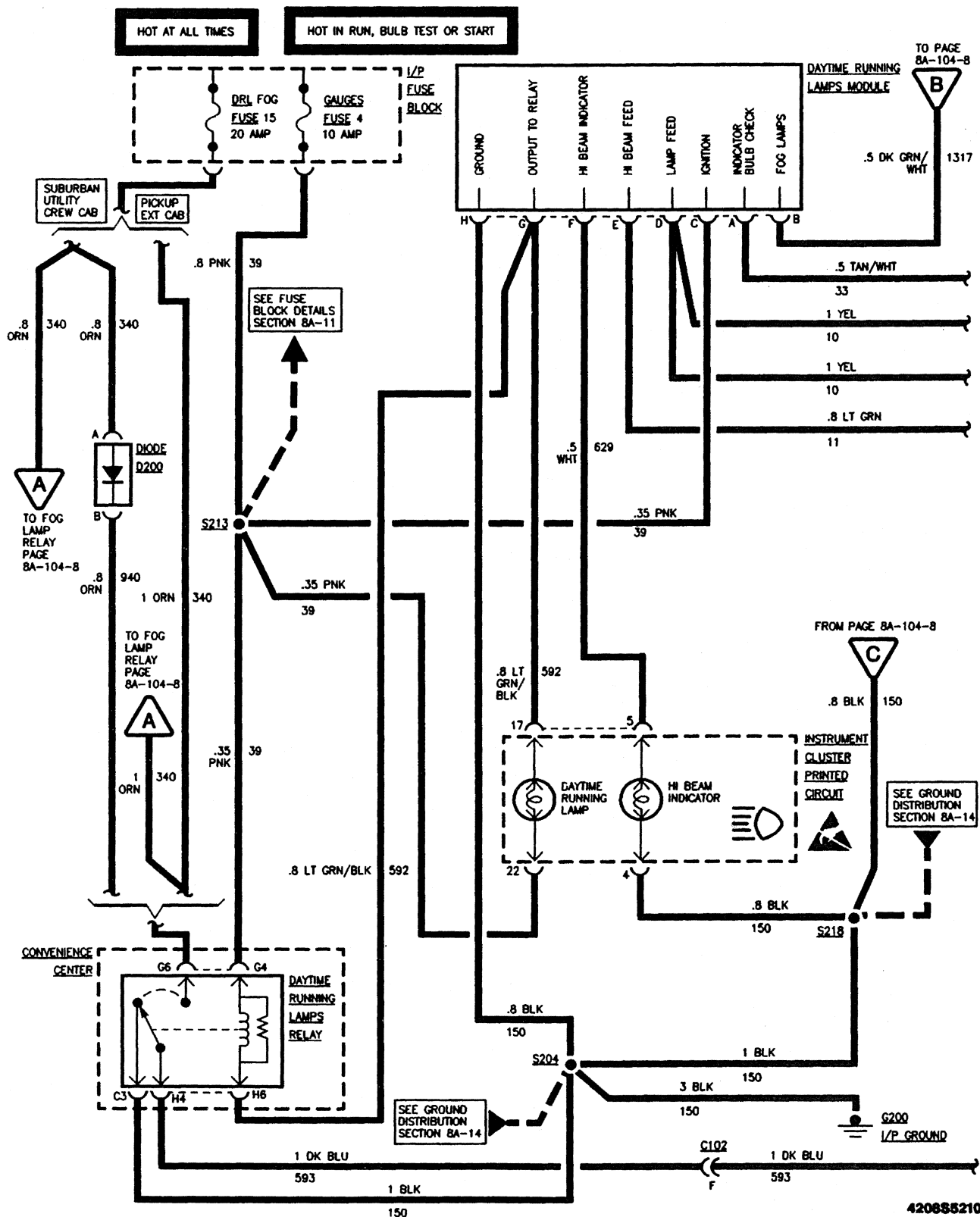


**HEADLAMPS: DAYTIME RUNNING LAMPS
QUAD HEADLAMPS W/O FOG LAMPS**

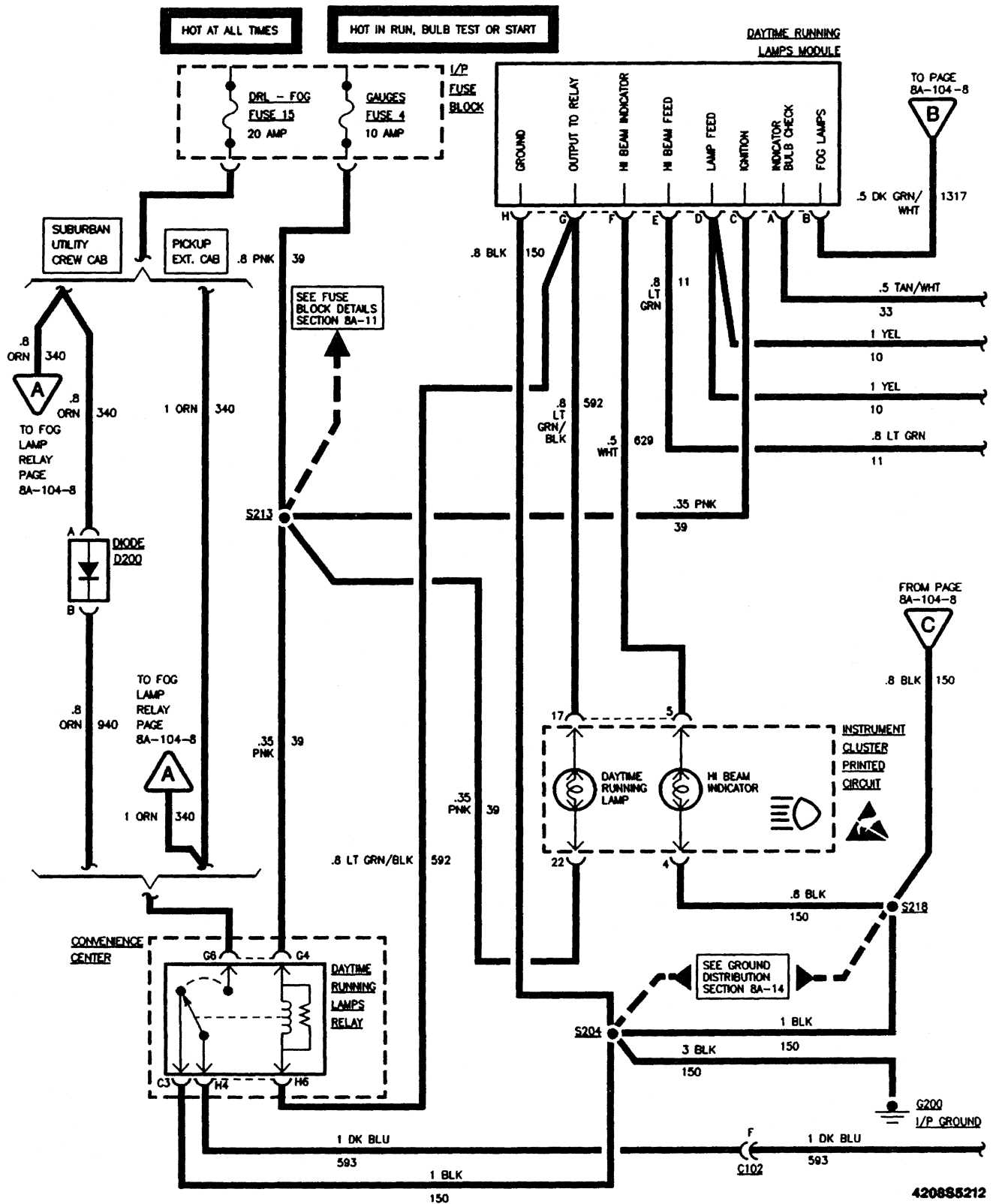
HEADLAMPS: DAYTIME RUNNING LAMPS



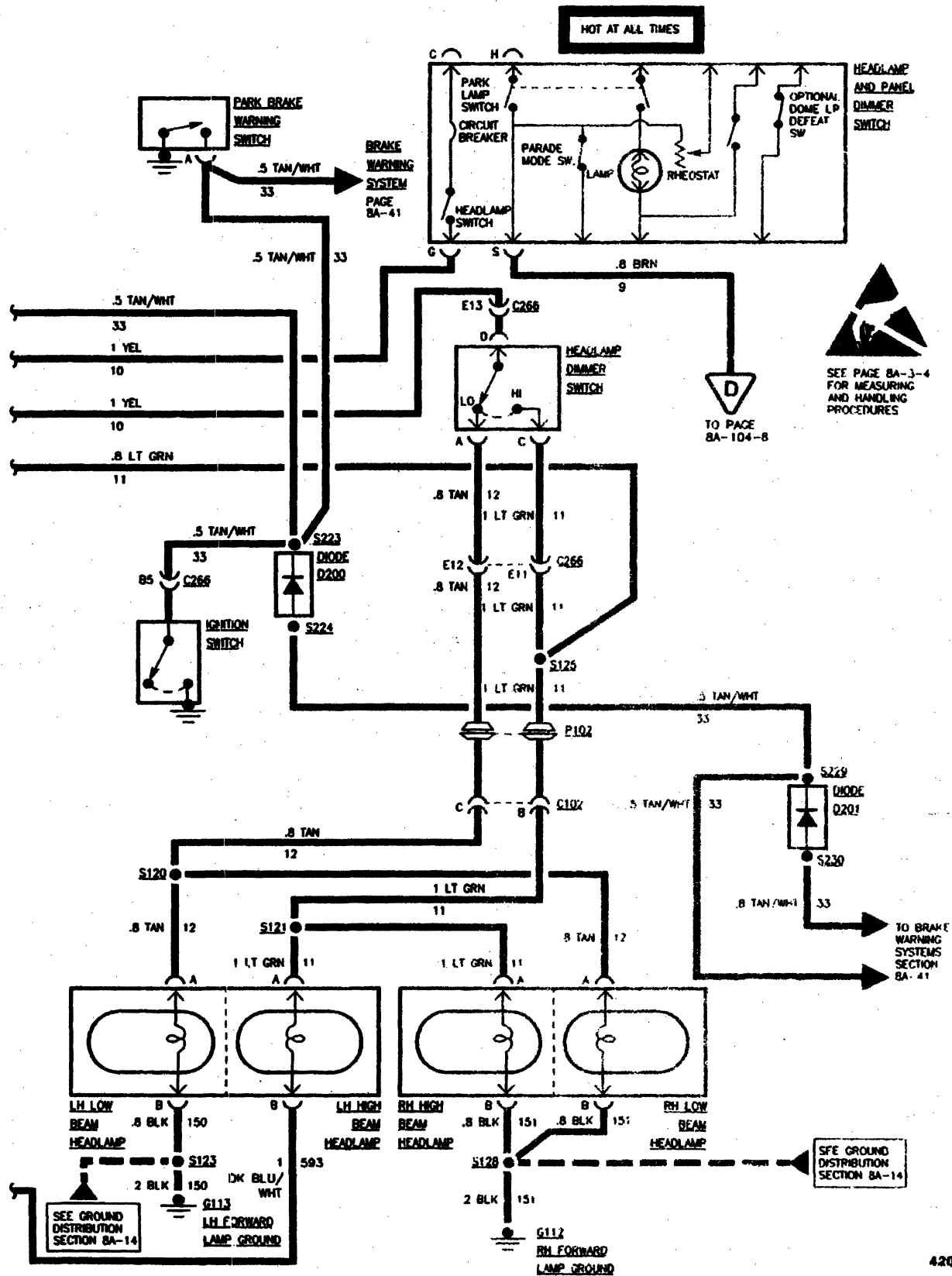
HEADLAMPS: DAYTIME RUNNING LAMPS BASE HEADLAMPS W/ FOG LAMPS



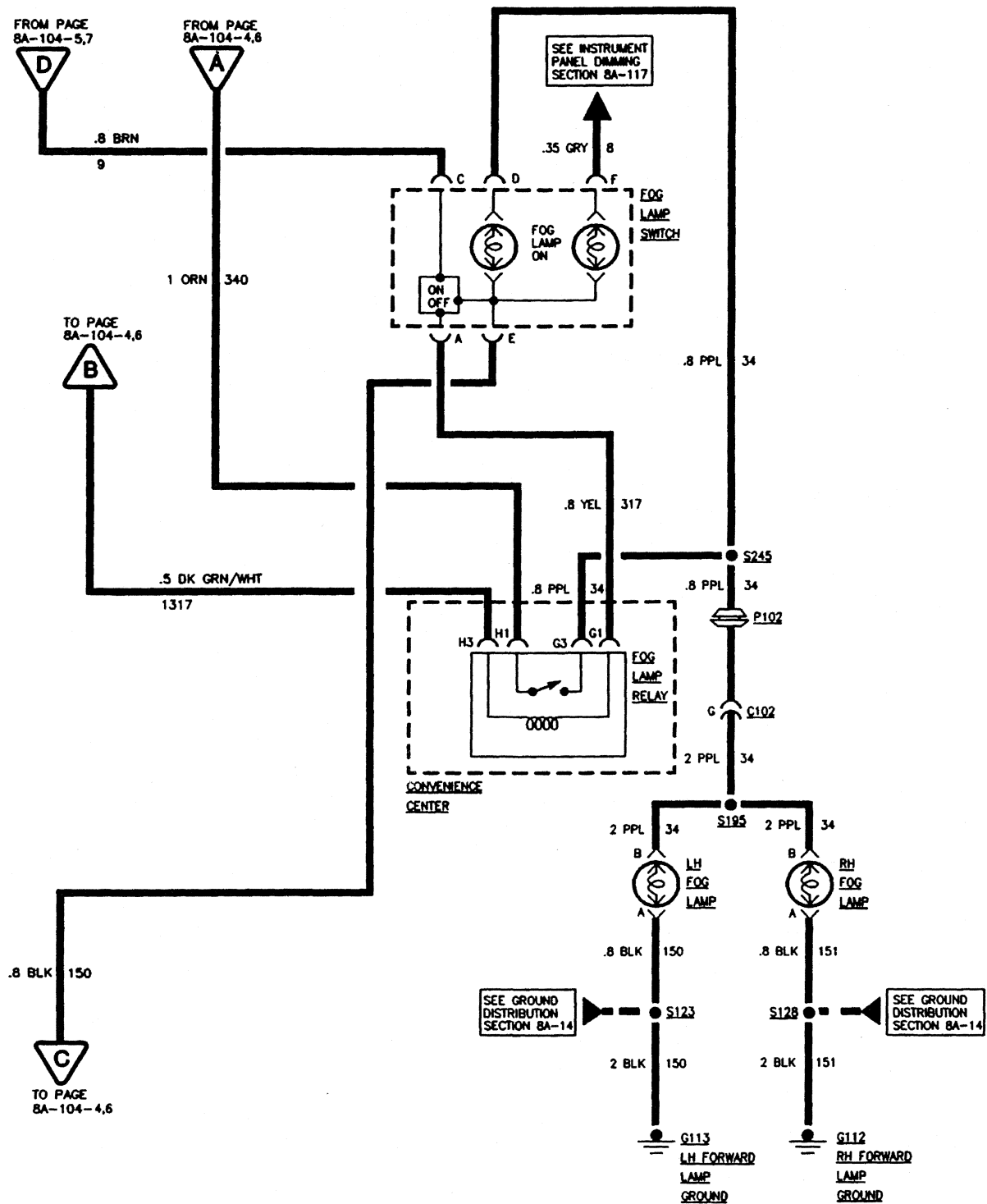




HEADLAMPS: DAYTIME RUNNING LAMPS



HEADLAMPS: DAYTIME RUNNING LAMPS



HEADLAMPS: DAYTIME RUNNING LAMPS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	41	
Daytime Running Lamps (DRL) Module	Under LH side of I/P, taped on I/P harness			
Fuse Block - I/P Harness	Lower LH side of I/P	26	31	
Headlamp (Off/On) & Panel Dimmer Switch	Upper LH side of I/P	26	31	
Headlamp Dimmer Switch	Lower LH side of steering column			
Ignition Switch	Under I/P, on steering column			
Instrument Cluster	LH upper end of I/P			
Fog Lamp, LH	At LH lower end of front bumper	0	1	
Fog Lamp, RH	At RH lower end of front bumper	0	1	
Headlamp, High/Low Beam, LH	LH front of vehicle			
Headlamp, High/Low Beam, RH	RH front of vehicle			
Headlamp, High Beam, LH (Composite)	LH front of vehicle			
Headlamp, High Beam, RH (Composite)	RH front of vehicle			
Headlamp, Low Beam, LH (Composite)	LH front of vehicle			
Headlamp, Low Beam, RH (Composite)	RH front of vehicle			
Park Brake Warning Switch	At park brake, under LH end of I/P			
CONNECTORS:				
C102	LH rear of engine compartment near fuse relay center, mounted on fender	4	7	
C110	LH rear of engine compartment, below underhood fuse/relay center			
C266	LH side of steering column, near bulkhead	26	31	
DIODES:				
D200	Behind center portion of I/P			
D201	I/P harness, approx. 11 cm from cruise control harness breakout			
GROUND:				
G112	RH front of engine compartment, below underhood reel lamp			
G113	On radiator support, near LH headlamp			
G200	Behind LH side of I/P, below fuse block			

HEADLAMPS: DAYTIME RUNNING LAMPS

COMPONENT	LOCATION	201-PG FIG. CONN
SPLICES:		
S120	Forward lamps harness, 18 cm left of LH horn breakout	
S121	Forward lamps harness, 12 cm left of LH horn breakout	
S123	Forward lamps harness, 5 cm right of LH horn breakout	
S125	Engine compartment, I/P harness, approx. 13 cm from P100	
S128	Forward lamps harness, 5 cm right of RH headlamp breakout	
S204	I/P harness, approx. 4 cm left of steering column connector breakout	
S213	I/P harness, approx. 16 cm right of fuse block breakout	
S213 (Crew Cab, VIN F).....	I/P harness approx. 16 cm right of breakout for LH door jamb switch	
S213 (Diesel).....	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout	
S218	I/P harness, approx. 4 cm right of turn signal flasher	
S223	I/P harness, approx. 11 cm left of cruise control harness breakout	
S223 (Diesel).....	I/P harness, approx. 11 cm left of breakout for crossbody harness connector C298	
S224	I/P harness, approx. 11 cm left of cruise control harness breakout	
S224 (Diesel).....	I/P harness, approx. 11 cm left of breakout for crossbody harness connector C298	
S229 (VIN P).....	Engine harness, under RH side of I/P 18 cm from P101	
S229 (VIN S).....	Engine harness, under RH side of I/P 18 cm from P101	
S229 (VIN Z, H, K auto)	Engine harness, approx. 30 cm from P101	
S230 (VIN F).....	Engine harness, under RH side of I/P 32 cm from P101	
S230 (VIN P).....	Engine harness, under RH side of I/P 32 cm from P101	
S230 (VIN S).....	Engine harness, under RH side of I/P 32 cm from P101	
S230 (VIN Z, H, K manual)	Engine harness, approx. 21 cm from P101	
S245	20 cm from cargo lamp switch	

HEADLAMPS: DAYTIME RUNNING LAMPS**DIAGNOSIS - HEADLAMPS: DAYTIME RUNNING LAMPS****TROUBLESHOOTING HINTS:**

1. Check the condition of the DRL-FOG FUSE 15 and the GAUGES FUSE 4. If either fuse is blown, LOCATE and REPAIR source of overload.
2. Check that grounds G112, G113 (with Fog Lamps or with QUAD Headlamps) and G200 are clean and tight.
3. Check that the Fog Lamp Relay is securely mounted in the Convenience Center.
4. Check the LH and RH Low and High Beam filaments.
5. Check the High Beam Indicator filament.
6. Check the LH and RH Fog Lamp filaments.
7. Check the Daytime Running Lamps (DRL) indicator filament.
8. Check that Daytime Running Lamps (DRL) Relay is securely mounted in Convenience Center.
 - Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
 - Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

LOW AND HIGH BEAM HEADLAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
1. Press Headlamp Switch to ON. Backprobe Headlamp and Panel Dimmer Switch Connector with a lamp from cavity "G" to ground.	Test lamp does not light.	REPLACE Headlamp and Panel Dimmer Switch.
	Test lamp lights.	GO TO step 2.
2. Disconnect Headlamp Dimmer Switch Connector. Connect a test lamp from Headlamp Dimmer Switch Connector cavity "D" to ground	Test lamp does not light.	LOCATE and REPAIR open in YEL (10) wire between Headlamp and Panel Dimmer Switch.
	Test lamp lights.	REPLACE Headlamp Dimmer Switch.

LOW BEAM HEADLAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
1. Press Headlamp Switch to ON. Move Headlamp dimmer Switch to LO position. Backprobe Headlamp dimmer Switch Connector with a test lamp from cavity "A" to ground.	Test lamp does not light.	REPLACE Headlamp Dimmer Switch
	Test lamp lights.	LOCATE and REPAIR open in TAN (12) wire between Headlamp Dimmer Switch. and S121

HIGH BEAM HEADLAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
1. Press Headlamp Switch to ON. Move Headlamp Dimmer Switch to HI position. Backprobe Headlamp Dimmer Switch Connector with a test lamp from cavity "C" to ground.	Test lamp does not light.	REPLACE Headlamp Dimmer Switch.
	Test lamp lights.	LOCATE and Repair open in LT GRN (11) wire between Headlamp Dimmer Switch and S121.

HEADLAMPS: DAYTIME RUNNING LAMPS**ONE LOW BEAM OR HIGH BEAM HEADLAMP INOPERATIVE (EXCEPT LH HI/LO BEAM HEADLAMP-BASE HEADLAMPS/LH BEAM HEADLAMP-QUAD HEADLAMPS)**

TEST	RESULT	ACTION
1. Connect a test lamp from LH/RH Headlamp Connector cavity "B" (QUAD Headlamps) or cavity "A" (BASE Headlamps) to B+.	Test lamp does not light.	LOCATE and REPAIR open in the wiring between affected Headlamp and ground.
	Test lamp lights.	Check for an open in the wiring between affected Headlamp and S120 (for inoperative low beam) or S121 (for inoperative high beam) If OK, REPLACE affected Headlamp.

LH HI/LO BEAM HEADLAMP (BASE HEADLAMPS) LH HIGH BEAM HEADLAMP (QUAD HEADLAMPS) IS INOPERATIVE

TEST	RESULT	ACTION
1. Press Headlamp Switch to ON. Move Headlamp Dimmer Switch to HI position. Backprobe LH HI/LO Beam Headlamp (BASE Headlamps)/LH High Beam Headlamp (QUAD Headlamps) Connector with a test lamp from cavity "A" (BASE Headlamps)/cavity "B" (QUAD Headlamps) to B+.	Test lamp lights.	GO TO step 2 if QUAD Headlamps. REPLACE LH HI/LO Beam Headlamp if BASE Headlamps.
	Test lamp does not light.	GO TO step 3.
2. Backprobe LH High Beam Headlamp Connector with a test lamp from cavity "A" to ground.	Test lamp lights.	REPLACE LH High Beam Headlamp
	Test lamp does not light.	LOCATE and REPAIR open in LT GRN (11) wire between S121 and LH High Beam Headlamp.
3. Remove Daytime Running Lamps (DRL) Relay. Connect a test lamp from DRL Relay cavity "C3" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Convenience Center and G200.
	Test lamp lights.	GO TO step 4.
4. Connect a fused jumper from DRL Relay cavity "H4" to "C3".	High Beam Headlamps light.	REPLACE DRL Relay.
	High Beam Headlamps do not light.	LOCATE and REPAIR open in DK BLU (593) wire between Convenience Center and LH HI/LO Beam Headlamp (BASE Headlamps) or LH High Beam Headlamp (QUAD Headlamps).

HIGH BEAM INDICATOR IS INOPERATIVE

TEST	RESULT	ACTION
1. Disconnect Instrument Cluster Printed Circuit Connector. Press Headlamp Switch to ON. Move Headlamp Dimmer Switch to HI position. Connect a test lamp from Instrument Cluster Printed Circuit Connector cavity "4" to B+.	Test does not light.	LOCATE and REPAIR open in BLK (150) wire between Instrument Cluster
	Test lamp lights.	GO TO step 2.
2. Connect a test lamp from Instrument Cluster Printed Circuit Connector cavity "5" to "4".	Test lamp lights.	REPLACE Instrument Cluster Printed Circuit.
	Test lamp does not light.	GO TO step 3.

HEADLAMPS: DAYTIME RUNNING LAMPS

TEST	RESULT	ACTION
3. Backprobe Daytime Running Lamps (DRL) Module with a test lamp from cavity "F" to ground.	Test lamp lights.	LOCATE and REPAIR open in WHT (629) wire between Instrument Cluster Printed Circuit and DRL Module.
	Test lamp does not light.	Check for an open in LT GRN (11) wire between S125 and DRL Module. If OK, REPLACE DRL Module.

LOW BEAM HEADLAMPS ON WITH HEADLAMP SWITCH OFF

TEST	RESULT	ACTION
1. Disconnect Headlamp Dimmer Switch Connector. Do Low Beam Headlamps turn OFF.	NO	LOCATE and REPAIR short to voltage in TAN (12) wire between Headlamp Dimmer Switch and LH Headlamp or RH Headlamp.
	YES	GO TO step 2.
2. Reconnect Headlamp Dimmer Switch Connector. Disconnect Headlamp and Panel Dimmer Switch Connector. Do Low Beam Headlamps turn OFF.	YES	REPLACE Headlamp and Panel Dimmer Switch.
	NO	GO TO step 3.
3. Disconnect Daytime Running Lamps (DRL) Module Connector.	Low Beam Headlamps turn OFF.	REPLACE DRL Module.
	Low Beam Headlamps remain lit.	LOCATE and REPAIR short to voltage in YEL (10) wire between Headlamp and Panel Dimmer Switch and Headlamp Dimmer Switch.

HIGH BEAM HEADLAMPS ON WITH HEADLAMP SWITCH OFF

TEST	RESULT	ACTION
1. Disconnect Headlamp Dimmer Switch Connector. Do High Beam Headlamps turn OFF?	YES	GO TO step 2.
	NO	GO TO step 4.
2. Reconnect Headlamp Dimmer Switch Connector. Disconnect Headlamp and Panel Dimmer Switch Connector.	High Beam Headlamps turn OFF.	REPLACE Headlamp and Panel Dimmer Switch.
	High Beam Headlamps remain lit.	GO TO step 3.
3. Disconnect Daytime Running Lamps (DRL) Module Connector.	High Beam Headlamps turn OFF.	REPLACE DRL Module.
	High Beam Headlamps remain lit.	LOCATE and REPAIR short to voltage in YEL (10) wire between Headlamp and Panel Dimmer Switch and Headlamp Dimmer Switch.
4. Disconnect Daytime Running Lamps (DRL) Module Connector.	High Beam Headlamps turn OFF.	REPLACE DRL Module.
	High Beam Headlamps remain lit.	LOCATE and REPAIR short to voltage in LT GRN (11) wire between Headlamp Dimmer Switch, DRL Module, LH High Beam Headlamp and RH High Beam Headlamp.

HEADLAMPS: DAYTIME RUNNING LAMPS**HIGH BEAM INDICATOR ON AT ALL TIMES**

TEST	RESULT	ACTION
1. Disconnect Daytime Running Lamps (DRL) Module Connector.	High Beam Indicator goes out.	REPLACE DRL Module.
	High Beam Indicator remains lit.	GO TO step 2.
2. Disconnect Instrument Cluster Printed Circuit Connector. Connect a digital multimeter from Instrument Cluster Printed Circuit Connector cavity "5" to ground. Measure voltage.	More than 1.0 volt.	LOCATE and REPAIR short to voltage in WHT (629) wire between DRL Module and Instrument Cluster Printed Circuit.
	Less than 1.0 volt.	REPLACE Instrument Cluster Printed Circuit.

FOG LAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
1. Remove Fog Lamp Relay from Convenience Center. Turn Ignition Switch to RUN. Press Park Lamp Switch to ON. Press Fog Lamp Switch to ON. Connect a digital multimeter from Fog Lamp Relay cavity "G1" to ground. Measure voltage.	Less than 10.0 volts.	GO TO step 2.
	More than 10.0 volts.	GO TO step 6.
2. Backprobe Fog Lamp Switch Connector with a digital multimeter from cavity "A" to ground. Measure voltage.	More than 10.0 volts	LOCATE and REPAIR open in YEL (317) wire between Fog Lamp Switch and Convenience Center.
	Less than 10.0 volts.	GO TO step 3.
3. Backprobe Fog Lamp Switch Connector with a digital multimeter from cavity "C" to ground. Measure voltage.	More than 10.0 volts	GO TO step 4.
	Less than 10.0 volts.	GO TO step 5.
4. Backprobe Fog Lamp Switch Connector with a test lamp from cavity "C" to "E".	Test lamp lights.	REPLACE Fog Lamp Switch.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between S218 and Fog Lamp Switch.
5. Backprobe Headlamp and Panel Dimmer Switch Connector with a test lamp from cavity "S" to ground.	Test lamp lights.	LOCATE and REPAIR open in BRN (9) wire between Fog Lamp Switch and Headlamp and Panel Dimmer Switch.
	Test lamp does not light.	REPLACE Headlamp and Panel Dimmer Switch.
6. Connect a digital multimeter from Fog Lamp Relay cavity "G1" to "H3". Measure voltage.	Less than 10.0 volts.	Check for an open in DK GRN/WHT (1317) wire between Daytime Running Lamps (DRL) Module and Convenience Center. If OK, REPLACE DRL Module.
	More than 10.0 volts.	GO TO step 7.
7. Connect a test lamp from Fog Lamp Relay cavity "H1" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (340) wire between I/P Fuse Block and Convenience Center.
	Test lamp lights.	GO TO step 8.

HEADLAMPS: DAYTIME RUNNING LAMPS

TEST	RESULT	ACTION
8. Connect a fused jumper from Fog Lamp Relay cavities "H1" to "G3".	Fog Lamps light.	REPLACE Fog Lamp Relay.
	Fog Lamps do not light.	LOCATE and REPAIR open in PPL (34) wire between Convenience Center and S195.

ONE FOG LAMP INOPERATIVE

TEST	RESULT	ACTION
1. Connect a test lamp from inoperative Fog Lamp Connector cavity "A" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150/LH, 151/RH) wire between ground (G113/LH, G112/RH) and inoperative Fog Lamp.
	Test lamp lights.	Check for an open in PPL (34) wire between S195 and affected Fog Lamp. If OK, REPLACE inoperative Fog Lamp.

FOG LAMP INDICATOR INOPERATIVE

TEST	RESULT	ACTION
1. Disconnect Fog Lamp Switch Connector. Connect a test lamp from Fog Lamp Switch Connector cavity "E" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Fog Lamp Switch and G200.
	Test lamp lights.	Check for an open in PPL (34) wire between Fog Lamp Switch and S245. If OK, REPLACE Fog Lamp Switch.

FOG LAMPS REMAIN LIT WITH FOG LAMP SWITCH OFF

TEST	RESULT	ACTION
1. Remove Fog Lamp Relay. Do Fog Lamps turn OFF?	NO	LOCATE and REPAIR short to voltage in PPL (34) wire between Fog Lamp Switch, LH Fog Lamp, RH Fog Lamp and Convenience Center.
	YES	GO TO step 2.
2. Disconnect Fog Lamp Switch Connector. Do Fog Lamps turn OFF?	YES	REPLACE Fog Lamp Switch.
	NO	LOCATE and REPAIR short to voltage in YEL (317) wire between Fog Lamp Switch and Convenience Center.

HEADLAMPS: DAYTIME RUNNING LAMPS**DAYTIME RUNNING LAMPS (DRL) ARE INOPERATIVE**

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Is "BRAKE" Indicator lit.	YES	Refer to SECTION 8A-41 for diagnosis of the Brake Warning System.
	NO	GO TO step 2.
2. Turn Ignition Switch to "LOCK." Disconnect Daytime Running Lamps (DRL) Module Connector. Turn Ignition Switch to RUN. Connect a test lamp from DRL Module Connector cavity "C" to ground.	Test lamp does not light.	LOCATE and REPAIR open in PNK (39) wire between I/P Fuse Block and DRL Module.
	Test lamp lights.	GO TO step 3.
3. Connect a test lamp from DRL Module Connector cavity "C" to "H".	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between DRL Module and G200.
	Test lamp lights.	GO TO step 4.
4. Remove Daytime Running Lamps (DRL) Relay from Convenience Center. Connect a test lamp from DRL Relay cavity "G6" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (340) wire between I/P Fuse Block and Convenience Center.
	Test lamp lights.	GO TO step 5.
5. Connect a test lamp from DRL Relay cavity "G4" to ground.	Test lamp does not light.	LOCATE and REPAIR open in PNK (39) wire between S213 and Convenience Center.
	Test lamp lights.	GO TO step 6.
6. Turn Ignition Switch to "LOCK." Reconnect DRL Module Connector. Turn Ignition Switch to RUN. Is Daytime Running Lamps (DRL) Indicator lit?	NO	Check for a poor connection or damaged terminals at DRL Module Connector. If OK, REPLACE DRL Module.
	YES	GO TO step 7.
7. Connect a digital multimeter from DRL Relay cavity "H6" to B+. Measure voltage.	Less than 10.0 volts.	LOCATE and REPAIR open in LT GRN/BLK (592) wire between DRL Module and Convenience Center.
	More than 10.0 volts.	GO TO step 8.
8. Connect a fused jumper from DRL Relay cavity "G6" to "H4".	High Beam Headlamps light at low intensity.	REPLACE DRL Relay.
	High beam Headlamps do not light.	GO TO step 9.
9. Connect a fused jumper from LH HI/LO Beam Headlamp Connector cavity "A" (BASE Headlamps) or LH High Beam Headlamp Connector cavity "B" (QUAD Headlamps) to B+.	High Beam Headlamps light at low intensity.	LOCATE and REPAIR open in DK BLU (593) wire between LH HI/LO Beam Headlamp (BASE Headlamps)/LH High Beam Headlamp (QUAD Headlamps) and Convenience Center.
	High Beam Headlamps do not light.	GO TO step 10.
10. Remove fused jumper. Press Headlamp Switch to ON. Move Headlamp Dimmer Switch to HI position.	LH High Beam Headlamp does not light.	Check for an open in LT GRN (11) wire between S121 and LH HI/LO Beam Headlamp (BASE Headlamps) or LH High Beam Headlamp (QUAD Headlamps). If OK, REPLACE LH HI/LO Beam Headlamp (BASE Headlamps) or LH High Beam Headlamp (QUAD Headlamps).
	RH High Beam Headlamp does not light.	GO TO step 11.

HEADLAMPS: DAYTIME RUNNING LAMPS

TEST	RESULT	ACTION
11. Backprobe RH HI/LO Beam Headlamp (BASE Headlamps)/RH High Beam Headlamp (QUAD Headlamps) Connector with a test lamp from cavity "A" (BASE Headlamps)/"B" (QUAD Headlamps) to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (151) wire between RH HI/LO Beam Headlamp and G112 (BASE Headlamps) or RH High Beam Headlamp and S128.
	Test lamp lights.	Check for an open in LT GRN (11) wire between S121 and RH HI/LO Beam Headlamp (BASE Headlamps) or RH High Beam Headlamp (QUAD Headlamps). If OK, REPLACE RH HI/LO Beam Headlamp (BASE Headlamps) or RH High Beam Headlamp (QUAD Headlamps).

DAYTIME RUNNING LAMPS (DRL) DOES NOT DISABLE WITH PARKING BRAKE ENGAGED

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Engage parking brake. Does "BRAKE" Indicator light?	NO	Refer to SECTION 8A-41 for diagnosis of the Brake Warning System.
	YES	GO TO step 2.
2. Turn Ignition Switch to "LOCK." Disconnect Daytime Running Lamps (DRL) Module Connector. Connect a test lamp from DRL Module Connector cavity "A" to B+.	Test lamp lights.	REPLACE DRL module.
	Test lamp does not light.	LOCATE and REPAIR open in TAN/WHT (33) wire between S223 and DRL Module.

DAYTIME RUNNING LAMPS (DRL) ARE OPERATIONAL AT ALL TIMES

TEST	RESULT	ACTION
1. Turn Ignition Switch to RUN. Is Daytime Running Lamps (DRL) indicator lit?	YES	GO TO step 2.
	NO	GO TO step 4.
2. Disconnect Daytime Running Lamps (DRL) Module. Is DRL indicator lit?	NO	REPLACE DRL Module.
	YES	GO TO step 3.
3. Disconnect Instrument Cluster Printed Circuit Connector. Does DRL disable?	YES	REPLACE Instrument Cluster Printed Circuit.
	NO	LOCATE and REPAIR short to ground in LT GRN/BLK (592) wire between Instrument Cluster Printed Circuit and Convenience Center.
4. Remove Daytime Running Lamps (DRL) Relay from Convenience Center. Does DRL disable?	YES	REPLACE DRL Relay.
	NO	LOCATE and REPAIR short to voltage in DK BLU (593) wire between Convenience Center and LH HI/LO Beam Headlamp (BASE Headlamps) and LH High Beam Headlamp (QUAD Headlamps).

HEADLAMPS: DAYTIME RUNNING LAMPS**DAYTIME RUNNING LAMPS (DRL) INDICATOR IS INOPERATIVE**

TEST	RESULT	ACTION
1. Turn Ignition Switch to "LOCK." Disconnect Instrument Cluster Printed Circuit Connector. Connect a test lamp from Instrument Cluster Printed Circuit Connector cavity "4" to B+.	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Instrument Cluster Printed Circuit and S204.
	Test lamp lights.	GO TO step 2.
2. Turn Ignition Switch to RUN. Connect a test lamp from Instrument Cluster Printed Circuit Connector cavity "17" to ground.	Test lamp does not light.	LOCATE and REPAIR open in LT GRN/BLK (592) wire between Instrument Cluster Printed Circuit and Daytime Running Lamps (DRL) Module.
	Test lamp lights.	Replace Instrument Cluster Printed Circuit.

CIRCUIT OPERATION**HEADLAMPS**

Voltage is supplied to the Headlamp Switch at all times. The Headlamp Switch includes a Self-Resetting Circuit Breaker. The Circuit Breaker opens when the Headlamp Switch draws too much current. When the Circuit Breaker opens, it interrupts the current flow. With no current flow, the Circuit Breaker cools off and resets automatically. When the Headlamp Switch is in HEAD, the Headlamp Dimmer Switch directs voltage to either the Low Beam or High Beam Headlamps (depending on Headlamp Dimmer Switch position). When the Headlamp Switch is in the HEAD position, not only is voltage supplied for the Headlamps, but the Daytime Running Lamps (DRL) Module receives a "Headlamps ON" signal. When the DRL Module receives this signal, it disables DRL operation (if Ignition Switch is RUN, BULB TEST or START positions).

When the Headlamp Switch is in HEAD and the Headlamp Dimmer Switch is in the LO position, voltage is applied through the closed contacts of the Headlamp Switch and the Headlamp Dimmer Switch to the LH and RH Low Beam Headlamps. Ground is supplied from G112 to the RH Low Beam Headlamp. Ground is supplied from G200, through the normally closed contacts of the Daytime Running Lamps (DRL) Relay to the LH Low Beam Headlamp (BASE Headlamps) or from G113 to the LH Low Beam Headlamp (QUAD Headlamps). Since both power and ground are applied to the Low Beam Headlamps, they light.

When the Headlamp Dimmer Switch is moved to the HI position with the Headlamp Switch in HEAD, voltage is applied through the closed contacts of the Headlamp Switch and the Headlamp Dimmer Switch to the DRL Module, LH High Beam Headlamp and the RH High Beam

Headlamp. With the Headlamp Dimmer Switch in the HI position the DRL Module receives a "High Beam Operation" signal. When this signal is received, the DRL Module applies voltage to the High Beam Indicator. Since the High Beam Indicator is supplied with a ground from G200, it lights. Ground is supplied from G112 for the RH High Beam Headlamp. Ground is supplied from G200, through the normally closed contacts of the DRL Relay to the LH High Beam Headlamp. With both power and ground applied to the High Beam Headlamps, they light at full intensity.

FOG LAMPS

Fog Lamp operation is possible with the Headlamp Switch in the PARK or HEAD position, but if the Headlamp Switch is in the HEAD position the Fog Lamps are only operational if the Headlamp Dimmer Switch is in the LO position.

With the Headlamp Switch in the PARK or HEAD position (if in the HEAD position, Headlamp Dimmer Switch must be in LO position) voltage is applied through the closed contacts of the Park Lamp Switch to the Fog Lamp Switch. With the Fog Lamp Switch in the ON position, voltage is applied through the closed contacts of the Fog Lamp Switch to the coil (power side) of the Fog Lamp Relay. Voltage is applied to the contact side of the relay through the DRL-FOG FUSE 15. Ground is supplied from the Daytime Running Lamps (DRL) Module to the coil (ground side) of the Fog Lamp Relay (provided that the Headlamp Dimmer Switch is in the LO position if the Headlamp Switch is ON). With both power and ground applied to the coil of the Fog Lamp Relay, the relay energizes and voltage is applied through the closed contact of the relay to the Fog Lamp ON indicator, the LH Fog Lamp and the RH Fog Lamp. With both power and ground applied to the Fog Lamp ON indicator, the LH Fog Lamp

HEADLAMPS: DAYTIME RUNNING LAMPS

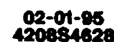
and the RH Fog Lamp, they light. If the Headlamp Dimmer Switch is switched to the HI position when the Headlamp Switch is in HEAD and the Fog Lamp Switch ON, then the DRL Module receives a "High Beam Headlamp" operation signal and disables the Fog Lamp Relay, turning the Fog Lamps OFF.

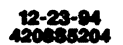
DAYTIME RUNNING LAMPS (DRL)

Daytime Running Lamp (DRL) operation is automatic provided that the Ignition Switch is in the RUN, BULB TEST or START positions, the parking brake is disengaged and the Headlamp Switch is in OFF. When DRL is operating, the High Beam Headlamps burn at a lower intensity than normal High Beam operation.

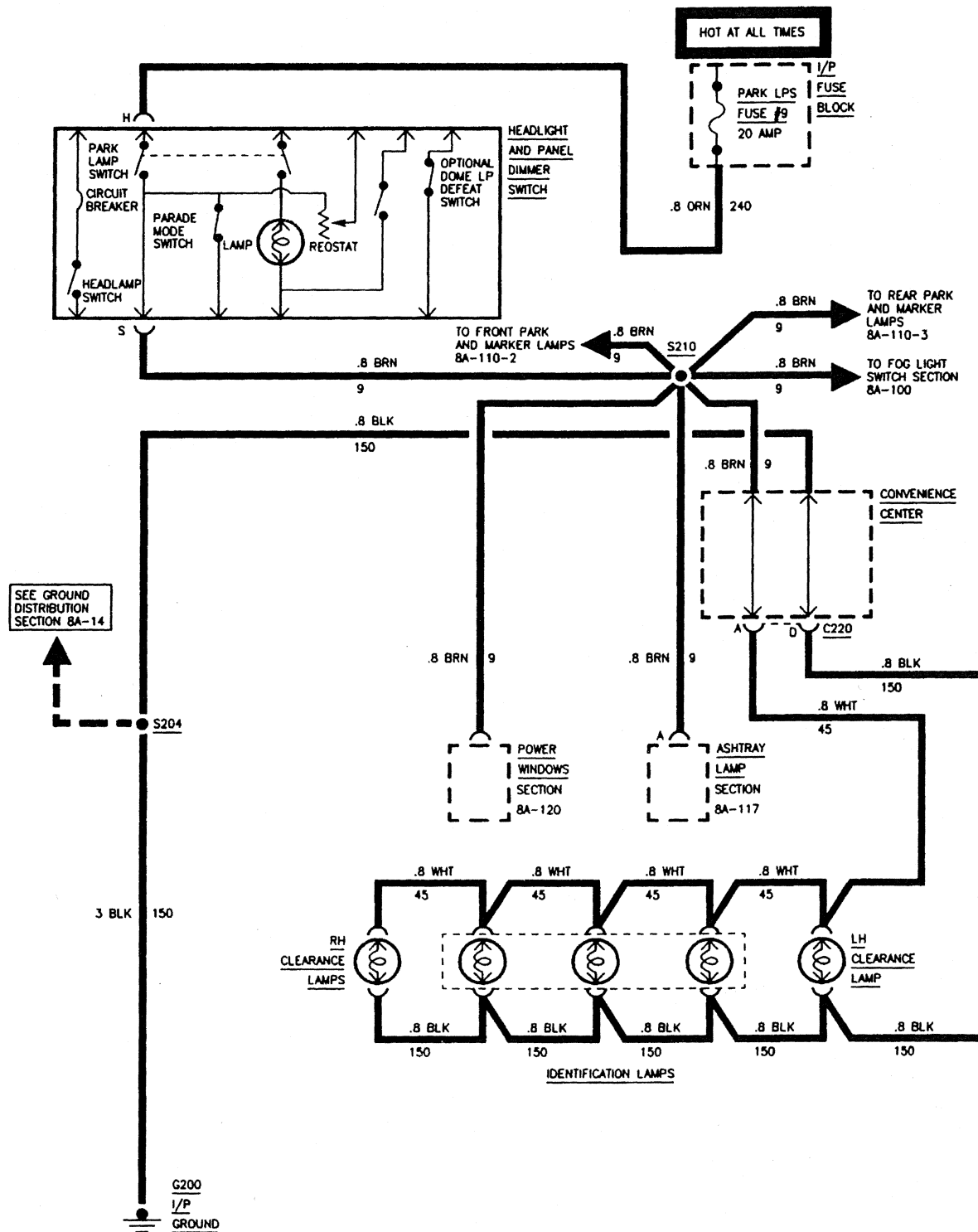
Voltage is applied through the GAUGES FUSE 4 when the Ignition Switch is in the RUN, BULB TEST or START positions to the Daytime Running Lamps (DRL) Module and to the coil (power side) of the Daytime Running Lamps (DRL) Relay. If the parking brake is disengaged and the Headlamp Switch is in the OFF position, then the DRL Module supplies ground to the coil (ground side) of

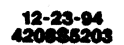
the DRL Relay. With both power and ground applied to the coil of the DRL Relay, it energizes, and the contacts close. Voltage is applied through the DRL-FOG FUSE 15 and the closed contacts of the DRL Relay to the LH and RH High Beam Headlamps (now placed in a series circuit). Since the High Beam Headlamps are in series, they will burn at a lower intensity than if they were in regular High Beam operation. When DRL is operating, the DRL Module will also supply ground to the Daytime Running Lamps (DRL) indicator. Voltage is applied through the GAUGES FUSE 4 with the Ignition Switch in the RUN, BULB TEST or START positions to the DRL indicator. With both power and ground applied to the DRL indicator, it lights. If the parking brake is engaged, a ground signal is sensed at the DRL Module. When the DRL Module receives this signal, it disables DRL operation by removing ground from the coil of the DRL Relay. The DRL Module will also disable DRL operation if the Headlamp Switch is ON or the Ignition Switch is turned to the OFF, "LOCK" or ACCY positions (also, by removing ground from the coil of the DRL Relay).

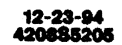




EXTERIOR LAMPS
ROOF MARKER LAMPS

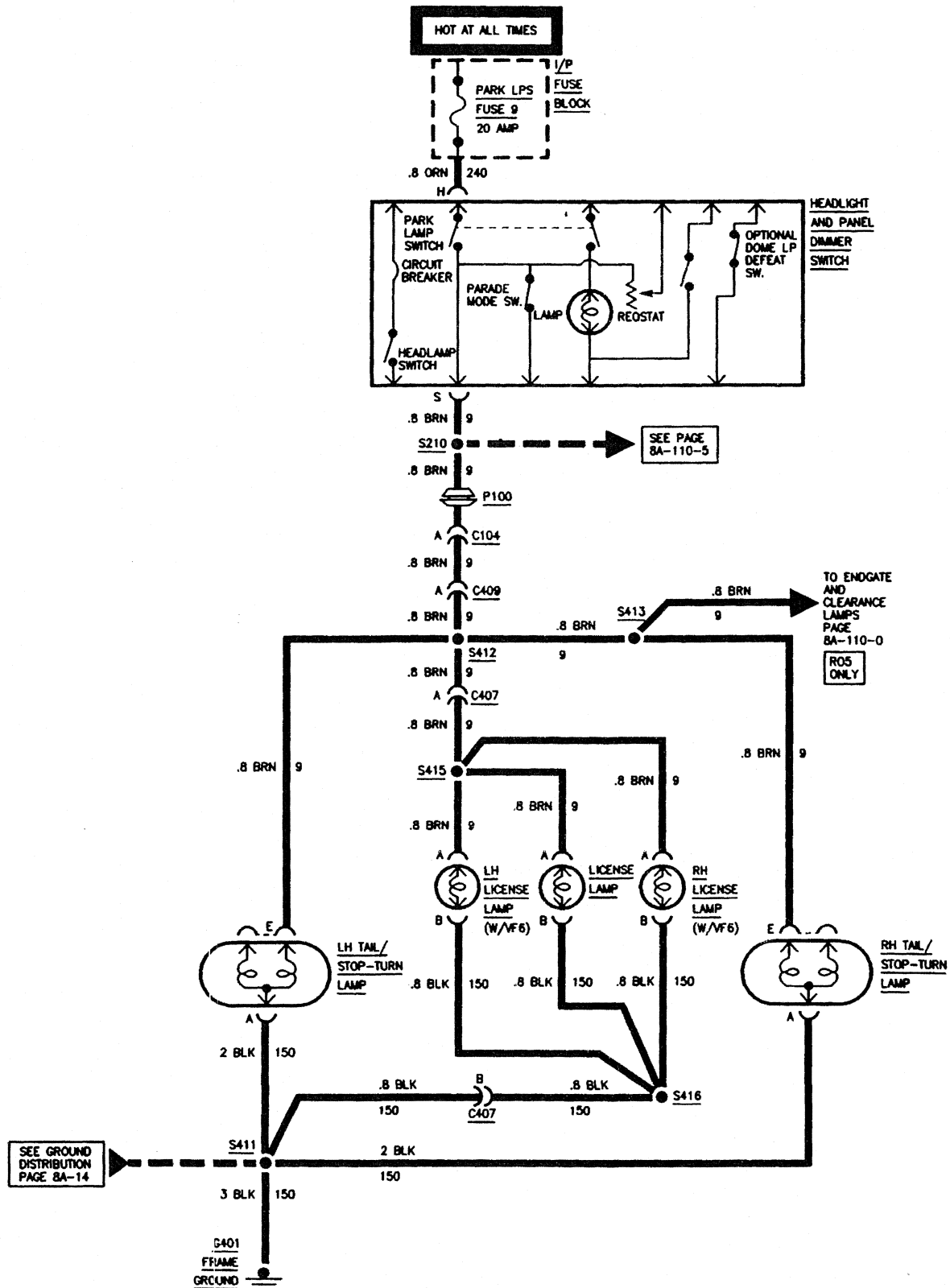


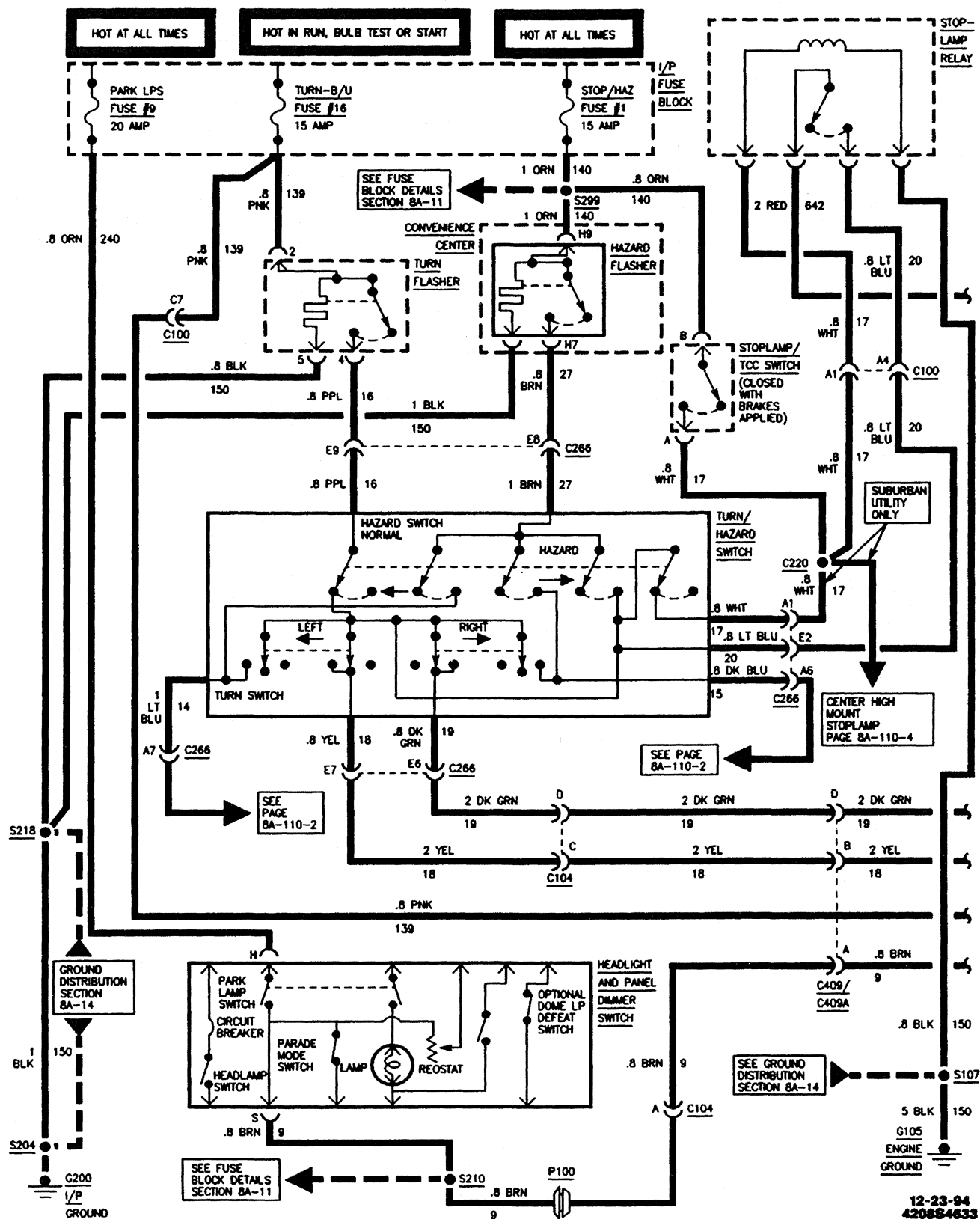




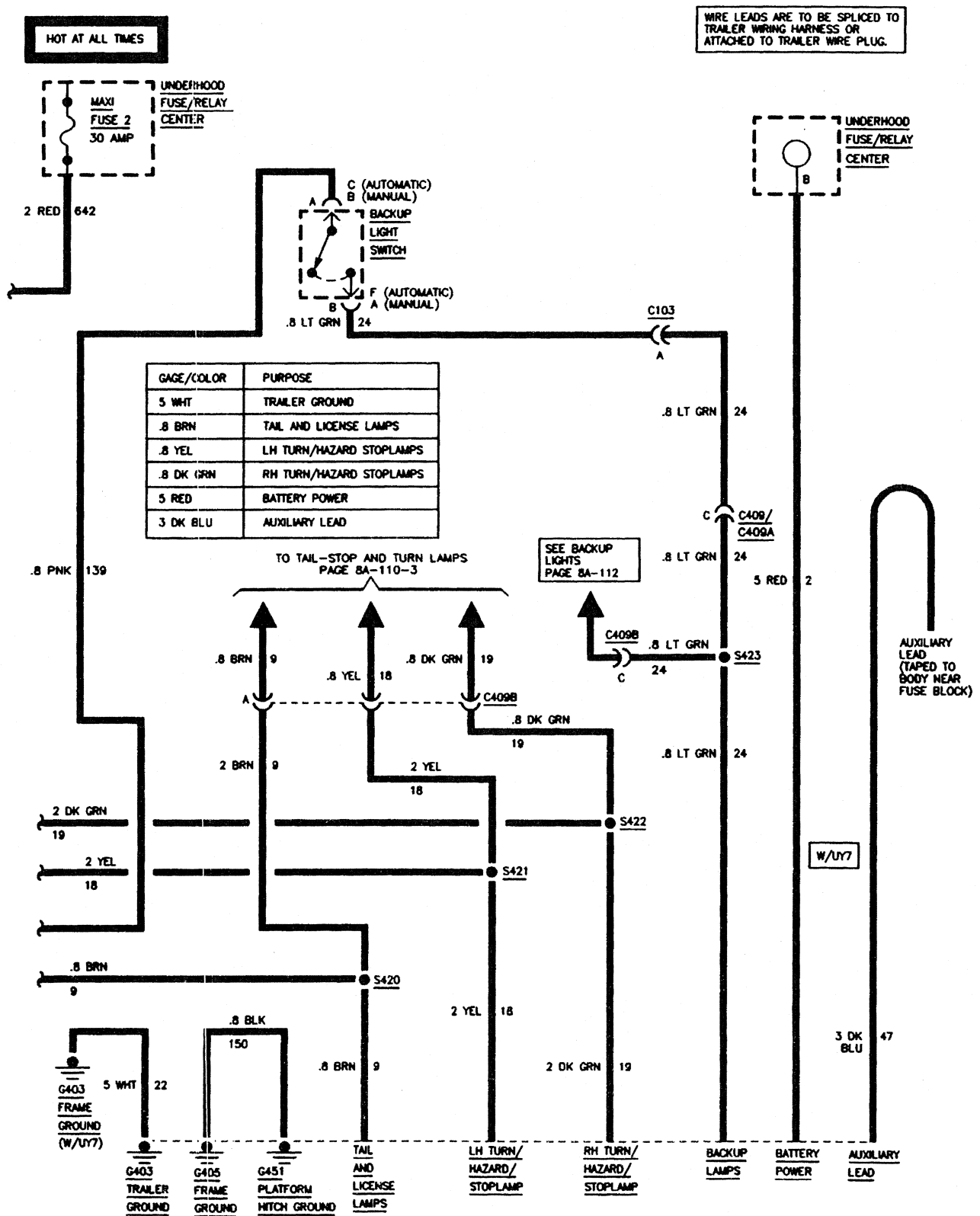
EXTERIOR LAMPS

REAR PARK/MARKER AND LICENSE LAMPS

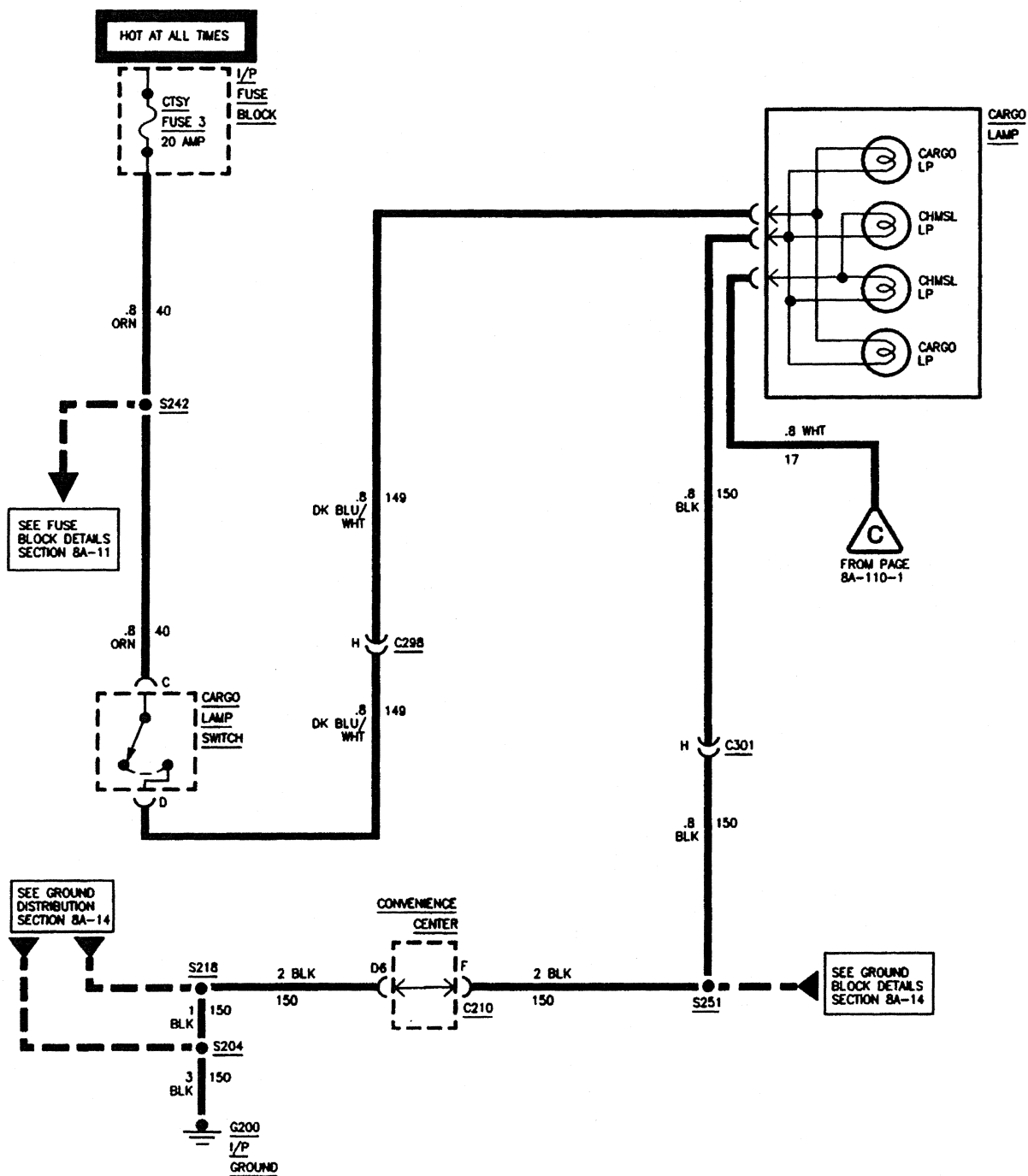




EXTERIOR LAMPS



EXTERIOR LAMPS
CARGO LAMPS



EXTERIOR LAMPS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Backup Light Switch, (MG5)....	LH side of transmission, below shift tower area.....	22	25	
Backup Lamp Switch (MW3)...	LH top of transmission.....	24	27	
Cargo Lamp.....	Rear center of cab, above rear window			
Cargo Lamp Switch.....	Center of I/P.....	35	42	
Center High Mount Stoplight (CHMSL) - Pickup.....	Back, top of cab			
Center High Mount Stoplight (CHMSL) - Suburban, Utility	At top rear center of vehicle			
Clearance Lamp Front, LH.....	Front of LH rear fender.....	49	59	
Clearance Lamp Front, RH	Front of RH rear fender	49	59	
Clearance Lamp Rear, LH.....	Rear of LH rear fender.....	49	59	
Clearance Lamp Rear, RH.....	Rear of RH rear fender.....	49	59	
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	41	
Endgate Clearance Lamps.....	On rear of endgate	52	63	
Fuse Block - I/P Harness	Lower LH side of I/P	26	31	
Hazard Flasher.....	Under LH side of I/P, on lower RH portion of convenience center.....	27	32	
Head Lamp (Off/On) & Panel Dimmer Switch.....	Upper LH side of I/P.....	26	31	
Instrument Cluster.....	LH upper end of I/P			
License Lamps.....	Rear of vehicle at license holder	53	64	
Marker Lamp, LH.....	On roof above windshield			
Marker Lamp, RH.....	On roof above windshield			
Park and Turn Lamp, LH.....	LH front corner of vehicle	4	7	
Park and Turn Lamp, RH	RH front corner of vehicle.....	3	6	
Stoplamp Relay (Pickup).....	On RH cowl, in engine compartment			
Tail, Stop, Turn Signal and Backup Lamp Assembly, LH.	LH rear of vehicle			
Tail, Stop, Turn Signal and Backup Lamp Assembly, RH	RH rear of vehicle			
TCC/Stoplight Switch	Top of brake pedal.....	34	39	
Turn Signal Flasher.....	Behind RH center of I/P	32	38	
Turn/Hazard Switch.....	LH upper side of steering column			
Underhood Fuse-Relay Center...	LH rear of engine compartment, on fender	5	8	

EXTERIOR LAMPS

COMPONENT	LOCATION	201-PG	FIG.	CONN
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7.....	10	
C102.....	LH rear of engine compartment near fuse relay center, mounted on fender.....	4.....	7	
C103.....	LH rear of engine compartment, under brake master cylinder			
C104.....	LH rear of engine compartment, under brake master cylinder			
C210.....	At convenience center.....	27.....	32	
C266.....	LH side of steering column, near bulkhead.....	26.....	31	
C298.....	Behind LH side of I/P, near convenience center.....	27.....	32	
C301.....	LH front kick panel.....	34.....	41	
C407.....	Beneath LH rear edge of bed.....	53.....	64	
C408 (03,53).....	Beneath center rear edge of bed.....	55.....	67	
C408 (06,16).....	Lower center inside portion of end gate.....	52.....	63	
C409.....	Beneath rear center of bed, near bumper.....	56.....	68	
C409A.....	Beneath rear center of bed, near bumper.....	56.....	68	
C409B.....	Beneath rear center of bed, near bumper.....	56.....	68	
GROUND:				
G105 (VIN P).....	RH top rear of cylinder head.....	15.....	18	
G105 (VIN Z, H, K).....	RH front wheelhouse.....	1.....	4	
G112.....	RH front of engine compartment, below underhood reel lamp			
G113.....	On radiator support, near LH headlamp			
G200.....	Behind LH side of I/P, below fuse block			
G400.....	RH "B" pillar.....	41.....	49	
G401.....	Rear of LH framerail, behind bumper			
G403.....	LH trailer hitch support.....	54.....	65	
G405.....	On # 1 roof bow			
GROMMETS:				
P100.....	LH rear of engine compartment at bulkhead.....	7.....	10	
SPLICES:				
S107 (VIN F).....	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P).....	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S).....	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN Z, H, K, N).....	Engine harness, approx, 5 cm from generator breakout			
S119.....	Forward lamps harness, 25 cm left of LH horn breakout			
S122.....	Forward lamps harness, 5 cm left of LH horn breakout			
S123.....	Forward lamps harness, 5 cm right of LH horn breakout			

EXTERIOR LAMPS

COMPONENT	LOCATION	201-PG FIG. CONN
S127	Forward lamps harness, 5 cm left of RH headlamp breakout	
S128	Forward lamps harness, 5 cm right of RH headlamp breakout	
S204	I/P harness, approx , 4 cm left of steering column connector breakout	
S210	Approx, 15 cm from headlamp dimmer switch connector	
S214	Approx. 23 cm from I/P cluster connector	
S218	I/P harness, approx. 4 cm right of turn signal flasher	
S220	I/P harness, approx. 12 cm from TCC stop lamp switch connector	
S242	I/P harness, approx. 8 cm right of fuse block breakout	
S242 (Crew Cab, VIN F).....	I/P harness approx. 8 cm right of breakout for LH door jamb switch	
S242 (Diesel).....	I/P harness, approx. 8 cm right of headlamp dimmer switch breakout	
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab - base).....	Crossbody harness, 12 cm right of LH door breakout	
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout	
S267	Approx. 27 cm from I/P cluster connector	
S410 (2-Door Utility)	Front to rear lamps harness, 12 cm from RH rear door speaker breakout	
S410 (4-Door Utility)	Front to rear lamps harness, 22 cm from RH rear door speaker breakout	
S410 (Suburban).....	Front to rear lamps harness, 12 cm from RH rear door speaker breakout	
S411 (Chassis Cab HD).....	Rear lamps harness, 37 cm right of tail lamps extension breakout	
S411 (Chassis Cab).....	Rear lamps harness, 32 cm right of tail lamps extension breakout	
S411 (Fleetside).....	Rear lamps harness, 17 cm left of tail lamps extension breakout	
S411 (Stepside).....	Rear lamps harness, 17 cm left of tail lamps extension breakout	
S412 (Chassis Cab HD)	Rear lamps harness, 23 cm right of tail lamps extension breakout	
S412 (Chassis Cab).....	Rear lamps harness, 7 cm right of tail lamps extension breakout	
S412 (Fleetside).....	Rear lamps harness, 23 cm left of tail lamps extension breakout	

EXTERIOR LAMPS

COMPONENT	LOCATION	201-PG FIG. CONN
S412 (Stepside)	Rear lamps harness, 16 cm right of tail lamps extension breakout	
S413 (Fleetside w/Dual Rear Wheels).....	Rear lamps harness, 45 cm right of tail lamps extension breakout	
S413 (Fleetside).....	Rear lamps harness, 16 cm right of tail lamps extension breakout	
S415	In license lamps harness	
S416	In license lamps harness	
S420	In trailer tow harness	
S421	In trailer tow harness	
S422	In trailer tow harness	
S423	In trailer tow harness	

DIAGNOSIS - EXTERIOR LIGHTS

TROUBLESHOOTING HINTS:

1. Rear lamp systems (taillamps, clearance lamps, endgate lamps and license plate lamps) all receive voltage from the same wire circuit BRN (9) and share the same ground terminal G401. If only one system is not working, LOCATE and REPAIR open in wiring and/or bulbs that pertain to that system.

2. Check condition of STOP, PARK LP, TURN-B/U Fuse(s). If fuse(s) is open, locate and repair source of overload. Replace fuse(s).

STOPLAMPS DO NOT OPERATE

TEST	RESULT	ACTION
1. Connect test lamp from ORN (140) wire at stoplamp switch connector to ground.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	GO to step 2.
2. Place hazard flasher switch to ON position.	Hazard flashers operate.	LOCATE and REPAIR open in ORN (140) wire between splice S251 and stoplamp switch connector.
	Hazard flashers do not operate.	LOCATE and REPAIR open in ORN (140) wire between fuse block and splice S251.
3. Connect test lamp from WHT (17) wire at stoplamp switch connector to ground. Depress brake pedal.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	REPLACE stoplamp switch.
4. Connect test lamp from WHT (17) wire at connector C266 to ground. Depress brake pedal.	Test lamp lights.	GO to step 5.
	Test lamp does not light.	LOCATE and REPAIR open in WHT (17) wire between stoplamp switch connector and connector C266.

EXTERIOR LAMPS

TEST	RESULT	ACTION
5. Connect test lamp from YEL (18) or DK GRN (19) wire at connector C266 to ground. Depress brake pedal.	Test lamp lights.	VERIFY condition of connectors C104 and C409.
	Test lamp does not light.	REPLACE turn/hazard switch.

STOPLAMPS DO NOT OPERATE ON ONE SIDE

TEST	RESULT	ACTION
1. Connect test lamp from YEL (18) or DK GRN (19) wire at affected stoplamp connector to ground. Depress brake pedal.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	GO to step 2.
2. Connect test lamp from YEL (18) or DK GRN (19) wire (depending on side with failure) at connector C409 to ground. Depress brake pedal.	Test lamp lights.	LOCATE and REPAIR open in YEL (18) or DK GRN (19) wire between connector C400 and affected stoplamp.
	Test lamp does not light.	GO to step 3.
3. Connect test lamp from YEL (18) or DK GRN (19) wire (depending on side with failure) at connector C104 to ground. Depress brake pedal.	Test lamp lights.	LOCATE and REPAIR open in YEL (18) or DK GRN (19) wire between connector C104 and connector C409.
	Test lamp does not light.	LOCATE and REPAIR open in YEL (18) or DK GRN (19) wire between connector C104 and connector C266. If no open is found, REPLACE turn/hazard switch.
4. Connect self-powered test lamp from BLK (150) wire at affected stoplamp to ground.	Test lamp lights.	REPLACE Stop lamp.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between stoplamp and ground G401.

REAR LAMP SYSTEMS DO NOT OPERATE

TEST	RESULT	ACTION
1. Place headlamp and panel dimmer switch in PARK. Observe front park and marker lamps.	Front park and marker lamps operate.	GO to step 3.
	Front park and marker lamps do not operate.	GO to step 2.
2. Connect Test lamp From ORN (240) wire at Term "H" of Headlamps and Panel Dimmer Switch to ground	Test lamp lights	LOCATE and REPAIR open in BRN (9) wire between splice S210 and headlamp and panel dimmer switch connector. If no open is found, REPLACE headlamp and panel dimmer switch.
	Test lamps does not light.	LOCATE and REPAIR open in STET (240) wire between fuse block and Headlamp and panel dimmer Switch.
3. Connect test lamp from BRN (9) wire at LH tail/stop-turn lamp connector to ground.	Test lamp lights.	LOCATE and REPAIR open in BLK (150) wire between splice S411 and ground G401.
	Test lamp does not light.	GO to step 4.
4. Connect test lamp from BRN (9) wire at connector C400 to ground.	Test lamp lights.	LOCATE and REPAIR open in BRN (9) wire between connector C409 and splice S412.
	Test lamp does not light.	GO to step 5.

8A - 110 - 14 ELECTRICAL DIAGNOSIS**EXTERIOR LAMPS**

TEST	RESULT	ACTION
5. Connect test lamp from BRN (9) wire at connector C104 to ground.	Test lamp lights.	LOCATE and REPAIR open in BRN (9) wire between connector C104 and connector C409.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (9) wire between splice S210 and connector C104.

TURN SIGNALS DO NOT OPERATE ON ONE SIDE

TEST	RESULT	ACTION
1. Turn hazard flasher ON. Observe lights on side of turn signals that does not work.	All lights flash.	GO to step 2.
	All lights do not flash.	GO to step 3.
2. Turn hazard warning system OFF. Place ignition switch in RUN and turn signal switch to side that does not work. Connect test lamp from LT BLU (14) or DK BLU (15) wire (depending on which side does not work) at connector C266 to ground.	Test lamp flashes.	System operating normally.
	Test lamp does not flash.	REPLACE turn/hazard switch.
3. Connect test lamp from LT BLU (14) or DK BLU (15) wire (depending on which side does not work) at LH or RH park lamp connector to ground.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	LOCATE and REPAIR open in either LT BLU (14) or DK BLU (15) wires between affected park lamp and connector C102 or connector C102 and connector C266.
4. Connect test lamp from LT BLU (14) or DK BLU (15) wire to BLK (150 or 151) wire at LH or RH park lamp.	Test lamp lights.	CHECK condition of bulb sockets.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150 or 151) wire between affected park lamp and ground G113 or G112.

EXTERIOR LAMPS**DIAGNOSIS - CARGO LAMP****TROUBLESHOOTING HINTS:**

1. Check condition of CTSY Fuse. If fuse is open, locate and repair source of overload. Replace fuse.

2. Check operation of dome and courtesy lamps, if inoperative, repair before proceeding with cargo lamp diagnosis.

CARGO LAMP DOES NOT OPERATE

TEST	RESULT	ACTION
1. Place cargo switch to ON. Connect test lamp from DK BLU/WHT (149) wire at cargo lamp connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	GO to step 3.
2. Connect test lamp from DK BLU/WHT (149) wire to BLU (150) wire at cargo lamp connector.	Test lamp lights.	REPLACE bulb.
	Test lamp does not light.	LOCATE and REPAIR open in BLU (150) wire from cargo lamp to splice S251.
3. Connect test lamp from ORN (40) wire at cargo lamp switch connector to ground.	Test lamp lights.	GO to step 4.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (40) wire between cargo switch connector and splice S242.
4. Connect test lamp from DK BLU/WHT (149) wire at cargo lamp switch connector to ground.	Test lamp lights.	LOCATE and REPAIR open in DK BLU/WHT (149) wire from cargo lamp switch connector to cargo lamp connector.
	Test lamp does not light.	REPLACE cargo lamp switch.

CIRCUIT OPERATION**TAIL, MARKER, ENDGATE CLEARANCE AND LICENSE LAMPS**

Voltage is supplied through the PARK LP Fuse to the Headlamp and Panel Dimmer Switch at all times. With the Headlamps and Panel Dimmer Switch in PARK or HEAD, voltage is supplied to the Tail, Marker, Endgate Clearance and License Lamps.

STOPLAMPS

Voltage is supplied at all times through the STOP/HAZ Fuse to the TCC/Stoplamp Switch. When the brake pedal is depressed, the contacts in the TCC/Stoplamp Switch close. Voltage is supplied through the Turn/Hazard Switch to the LH and RH Stoplamp, and the Stoplamp lights. If a Turn Signal is on, the Stoplamp on that side will flash as a Turn Signal. The other Stoplamp will serve as a Stoplamp.

TURN SIGNAL LAMPS

With the Ignition Switch in RUN or START, voltage is supplied through the TURN-B/U Fuse and Turn Flasher to the normally closed contact of the Hazard Flasher Switch in the Turn/Hazard Switch.

With the Turn Signal Switch in LH Turn position, voltage is supplied to both the LH Turn Indicator and the LH Front Park/Turn Lamp LT BLU (14) wire. Voltage is supplied to the LH Rear Turn Lamp YEL (18) wire.

The Lamps go on immediately. They begin to flash when the current flow heats up the timing element in the flasher and it repeatedly opens and closes the circuit.

The voltage supplied to the LH Front Park/Turn Lamp will also be supplied to the LH Front Marker Lamp. If the Headlamp and Panel Dimmer Switch is in the OFF position, the LH Front Marker Lamp will find a path to ground through splice S122 and the many Lamps connected in parallel to ground. These Lamps provide low resistance paths to ground. The Marker Lamp will flash with the Turn Lamps. The Lamps used for the ground path will not flash, however, since the voltage drop across the Marker Lamp is much higher than that across the other Lamps.

When the Headlamp and Panel Dimmer Switch is in either PARK or HEAD, voltage is supplied through the PARK LP Fuse, Headlamp and Panel Dimmer Switch and Splice 122 to the Marker and Park Lamps. If the Turn/Hazard Switch is in TURN LEFT, the LH Front Marker Lamp will have voltage at both connections and will go out. When the flasher removes voltage to the Turn

EXTERIOR LAMPS

Lamp, the Marker Lamp will be grounded through the Turn Lamp and will go on. In this way, the LH Front Marker Lamp will flash on when the LH Front Park/Turn Lamp goes off, and off when the Turn Lamp goes on.

With the Turn/Hazard Switch in TURN RIGHT, voltage will be supplied to the RH Lamps in the same way.

HAZARD LAMPS

Voltage is supplied at all times, through the STOP Fuse and the Hazard Flasher to the normally open contact of the Hazard Switch in the Turn/Hazard Switch. With the Hazard Switch in HAZARD FLASH, voltage is supplied to both Front and Rear Turn Lamps. All of the Turn Lamps and Turn Indicators flash on and off.

The Front Marker Lamps flash in HAZARD FLASH just as they did in TURN RIGHT and TURN LEFT. If the Headlamp and Panel Dimmer Switch is in OFF, they flash on when the Hazard Lamps are on. If the Headlamp and Panel Dimmer Switch is in either PARK or HEAD, they flash on when the Hazard Lamps are off and off when the Hazard Lamps are on.

In HAZARD, the circuit is always open and the Hazard Flasher controls the Lamps.

PARK AND MARKER LAMPS

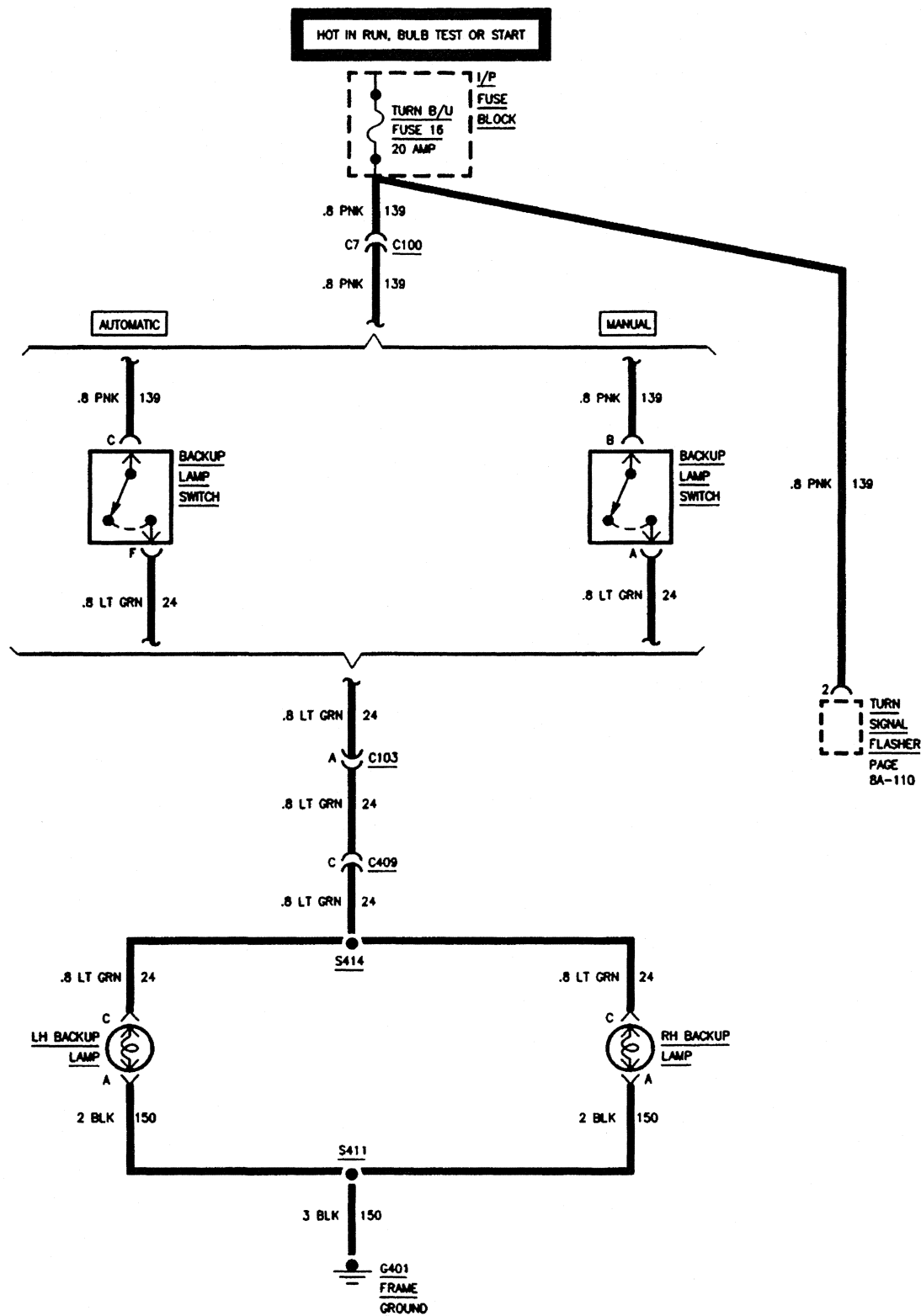
Voltage is supplied through the PARK LP Fuse to the Headlamp and Panel Dimmer Switch at all times. With the Headlamp and Panel Dimmer Switch in PARK or HEAD, voltage is supplied to the Park, Tail, Marker, Roof Marker and License Lamps.

CARGO LAMP

Voltage is supplied at all times through the CTSY Fuse 3 to the Cargo Lamp Switch. When the Cargo Lamp Switch is turned on, voltage flows through the switch to the Lamp.

BLANK

BACKUP LAMPS



BACKUP LAMPS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Fuse Block - I/P Harness	In underhood fuse and relay center			
Backup Lamp Switch (MG5)....	LH side of transmission, below shift tower area.....	22	25	
Backup Lamp Switch (MW3)...	LH top of transmission.....	24	27	
Backup Lamp Switch (Automatic).....	LH side center of transmission	21	24	
Turn Signal Flasher.....	Behind RH center of I/P	32	38	
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7	10	
C103.....	LH rear of engine compartment, under brake master cylinder			
C409.....	Beneath rear center of bed, near bumper.....	56	68	
GROUND:				
G401.....	Rear of LH framerail, behind bumper			
SPLICES:				
S411 (Chassis Cab HD).....	Rear lamps harness, 37 cm right of tail lamps extension breakout			
S411 (Chassis Cab).....	Rear lamps harness, 32 cm right of tail lamps extension breakout			
S411 (Fleetside).....	Rear lamps harness, 17 cm left of tail lamps extension breakout			
S411 (Stepside).....	Rear lamps harness, 17 cm left of tail lamps extension breakout			
S414 (Fleetside).....	Rear lamps harness, 10 cm left of tail lamps extension breakout			
S414 (Stepside).....	Rear lamps harness, 10 cm left of tail lamps extension breakout			
S414 Chassis Cab	Rear lamps harness, 12 cm right of tail lamps extension breakout			

TROUBLESHOOTING HINTS:**(Perform before beginning System Diagnosis)**

1. Check TURN B/U Fuse by visual inspection.
2. Check Back Up Lamps for damage to filament or corrosion between bulb and socket.
3. Check adjustment of Back Up Lamps Switch.
 - Refer to Section 8B for Back Up Lamp Switch access.
 - Refer to Section 7A for Park/Neutral Position Switch access.

- Check for a broken (or partially broken) wire inside of the insulation which could cause system failure but prove "GOOD" in a continuity/voltage check (see "Troubleshooting Procedure," page 8A-4-0).
- Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," page 8A-4-0).

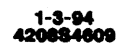
BACKUP LAMPS**LH AND RH BACK UP LAMPS ARE INOPERATIVE**

TEST	RESULT	ACTION
1. Disconnect BACKUP Lamp Switch. Place ignition Switch in "RUN." Connect a test lamp from terminal "C"(Automatic) or terminal "A"(Manual) to ground.	Lamp does not light.	Repair open in CKT 139.
	Lamp lights.	GO TO step 2.
2. Connect BACKUP Lamp Switch terminal "F" (Automatic) or terminal "A" (Manual) to battery.	Backup Lamp Lights.	Replace Backup Lamp Switch.
	Backup Lamp does not light.	Check/Repair open in CKT 24 and CKT 150.

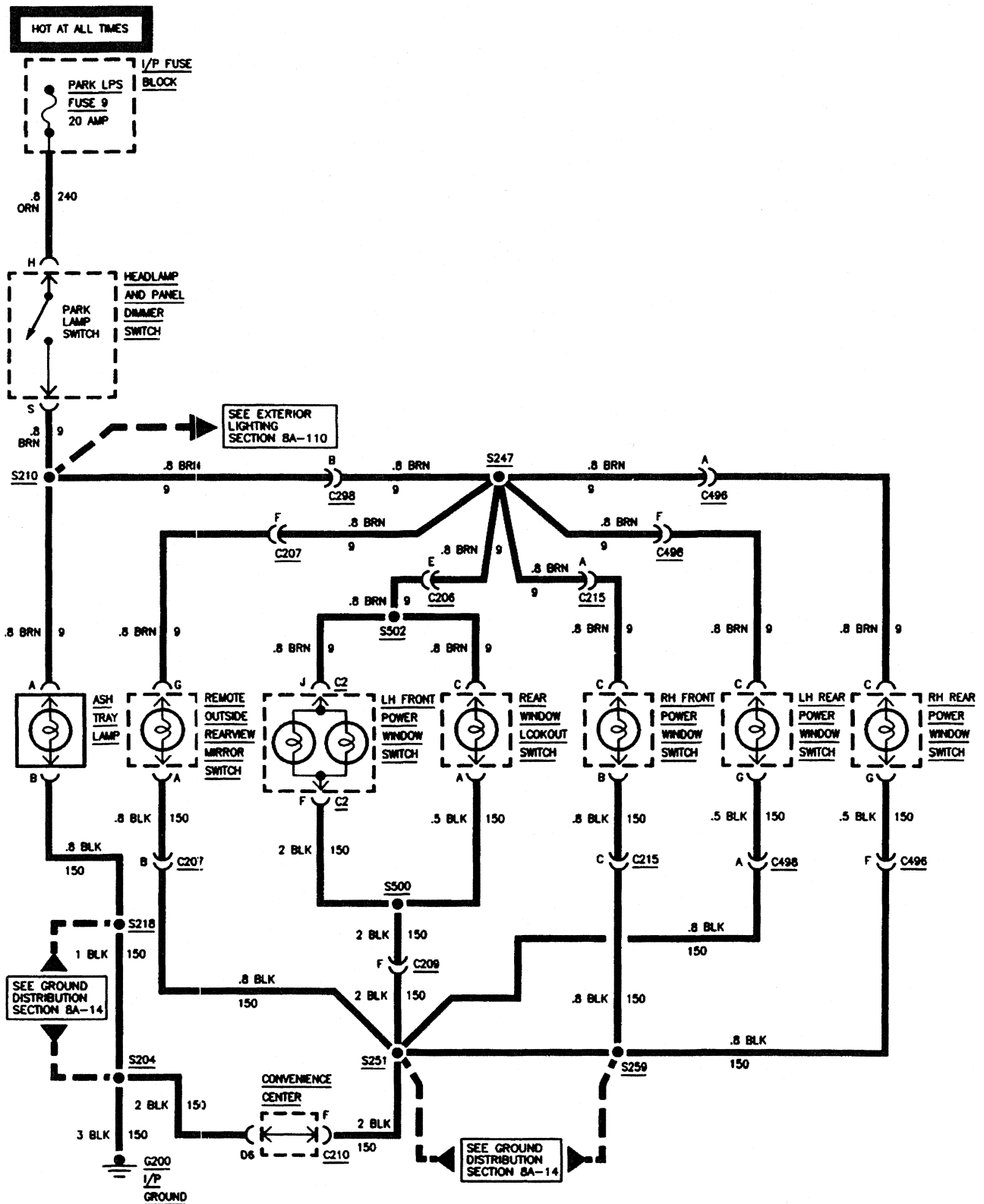
CIRCUIT OPERATION**BACKUP LAMPS**

When the Ignition Switch in "RUN," voltage is applied through the TURN-B/U Fuse to the Backup Lamp Switch. With the Transaxle in "REVERSE," voltage is applied to the LH and RH Back Up Lamps, which are permanently grounded. When voltage is applied to CKT 24, the Back Up Lamps are on.

BLANK

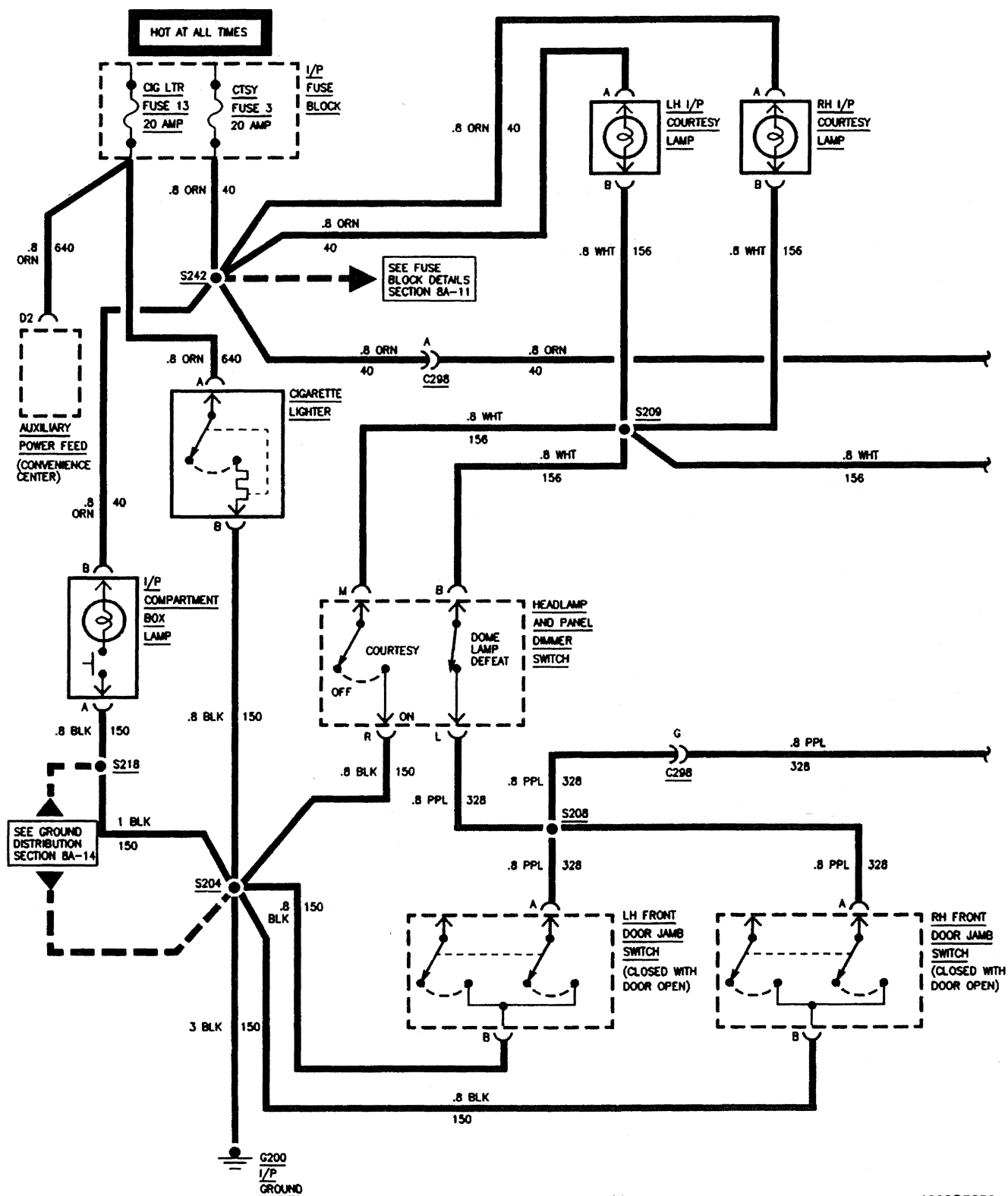


INTERIOR LAMPS

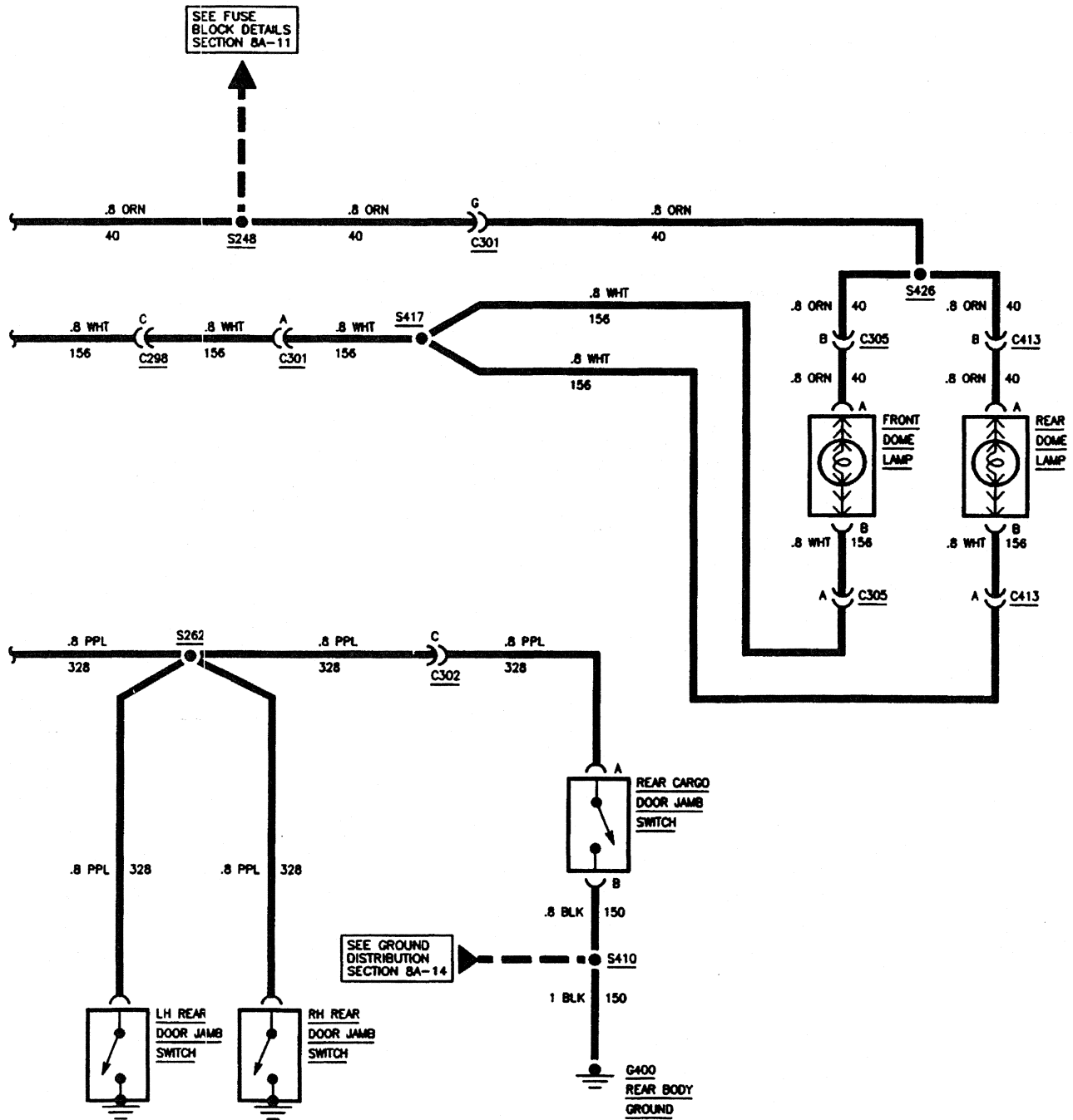


INTERIOR LAMPS

SUBURBAN/UTILITY/CREW CAB BASE

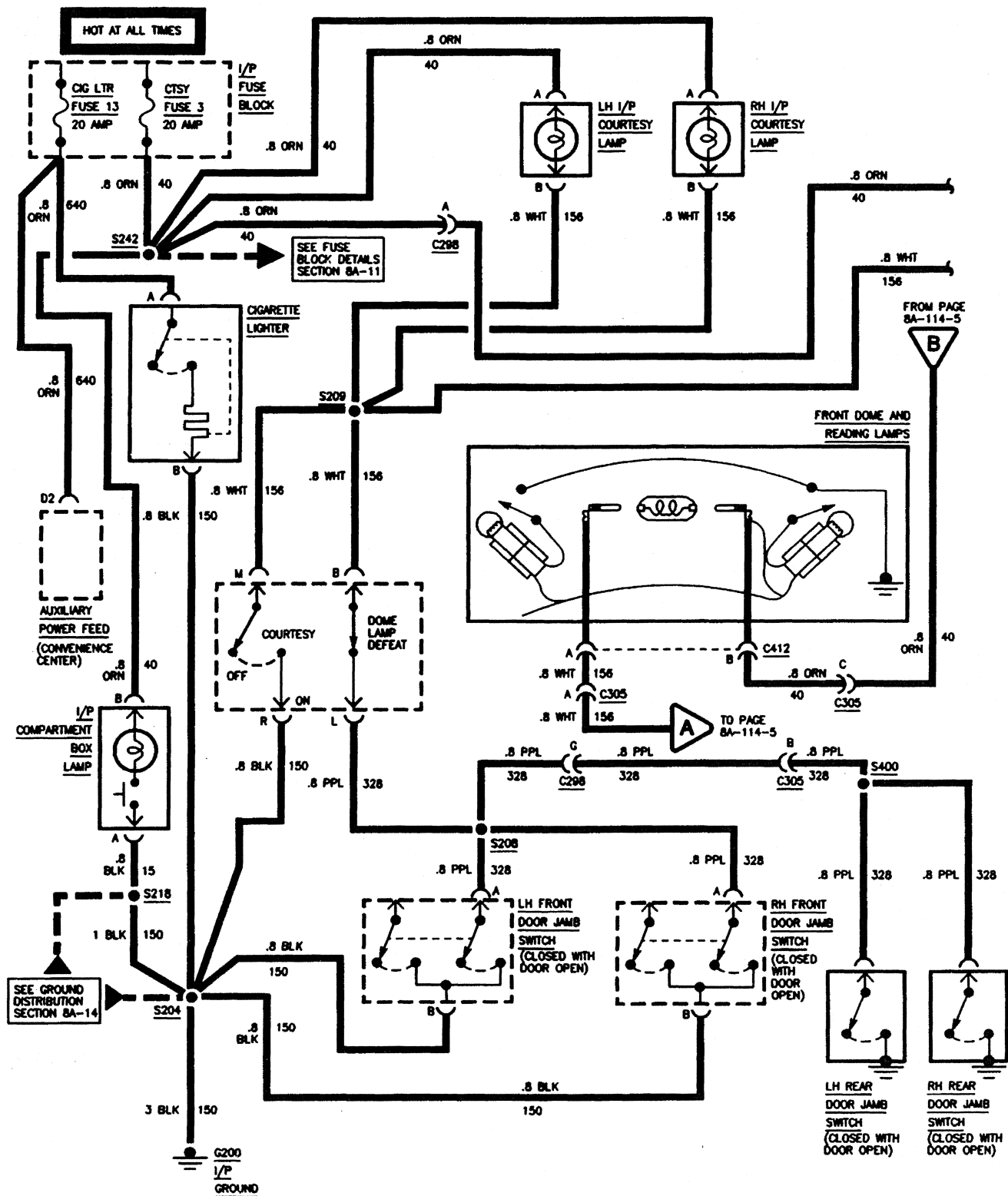


INTERIOR LAMPS SUBURBAN/UTILITY/CREW CAB BASE

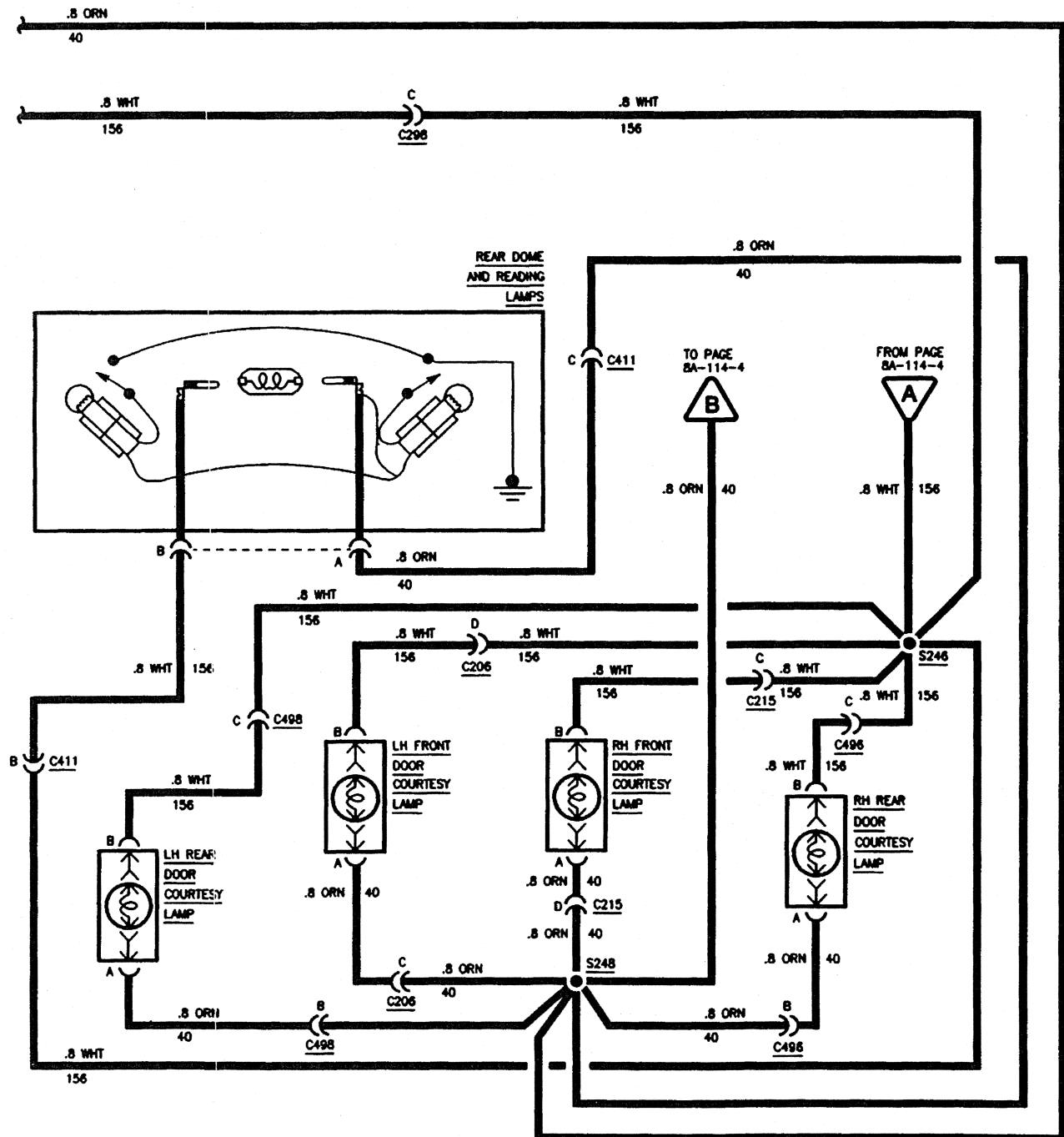


INTERIOR LAMPS

CREW CAB W/AUXILIARY LIGHTING

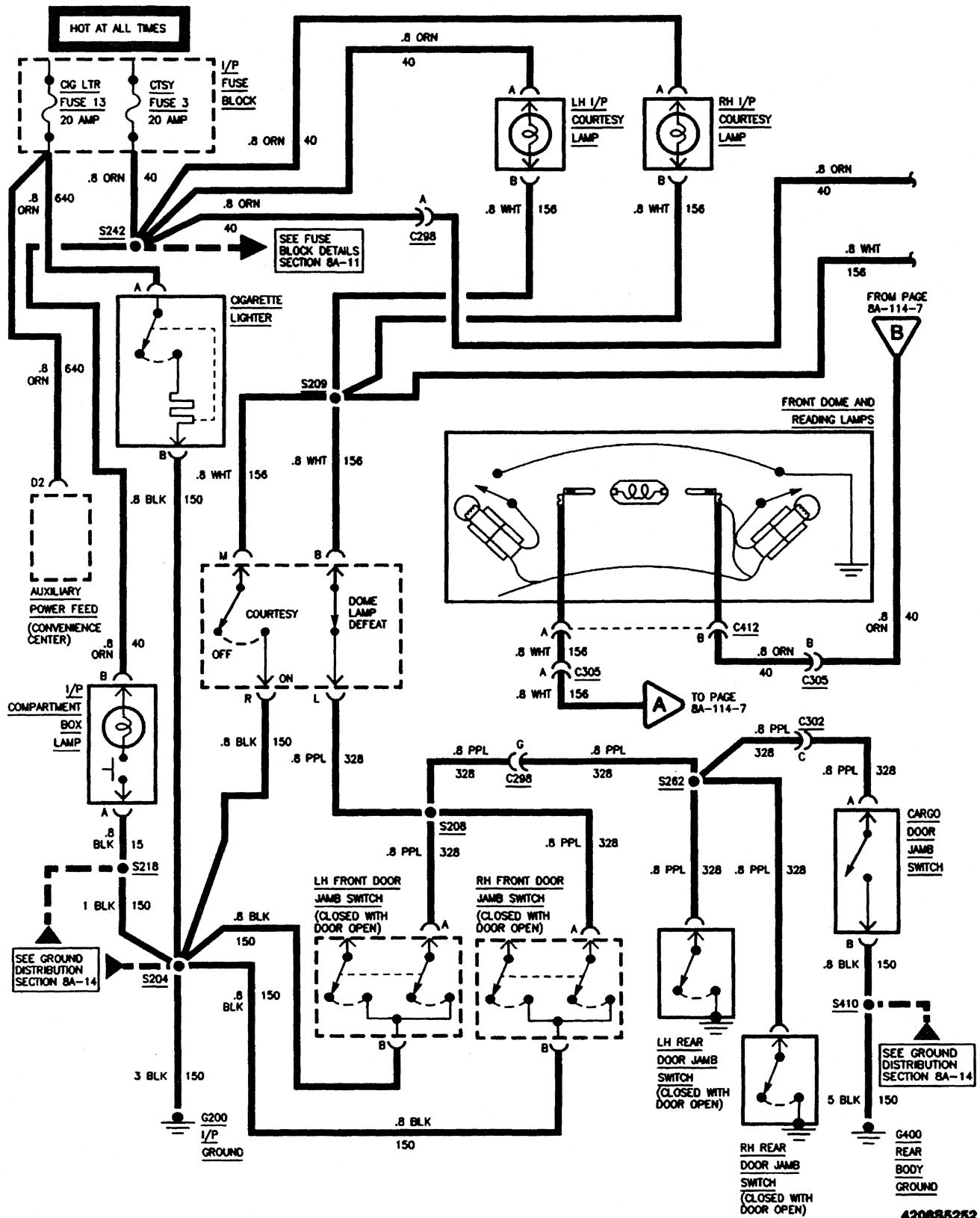


INTERIOR LAMPS CREW CAB W/AUXILIARY LIGHTING



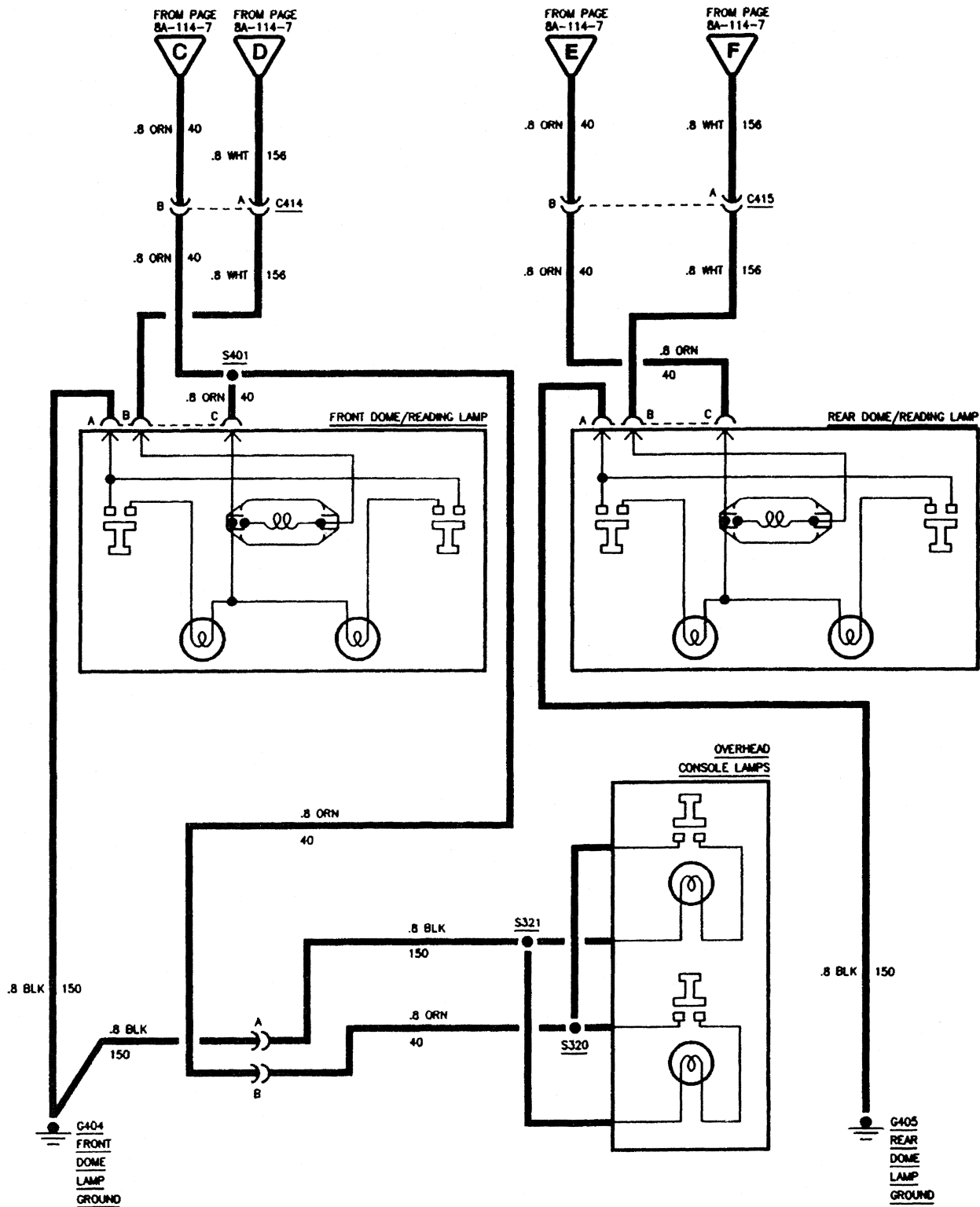
INTERIOR LAMPS

SUBURBAN W/AUXILIARY LIGHTING



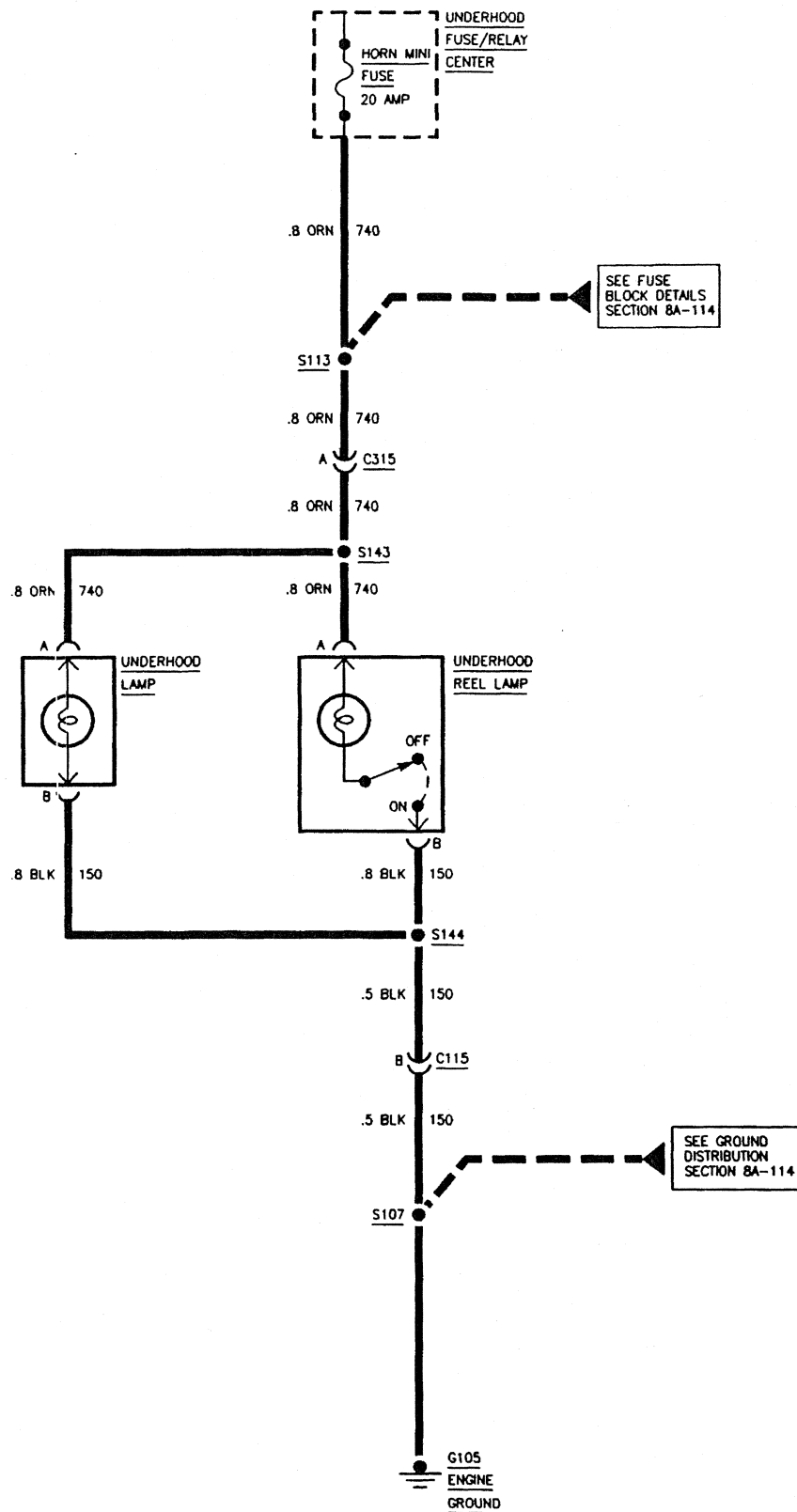


INTERIOR LAMPS OVERHEAD CONSOLE



INTERIOR LAMPS

UNDERHOOD LAMP AND REEL LAMP



INTERIOR LAMPS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Ashtray Lamp.....	Behind I/P, at ashtray			
Cigarette Lighter	Center of I/P, at ashtray			
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34.....		41
Front Dome/Reading Lamps,	Inside on roof			
Headlamp (Off/On) & Panel Dimmer Switch.....	Upper LH side of I/P	26.....		31
I/P Compartment Box Lamp.....	In I/P compartment box			
LH Cargo Door Contactor.....	LH rear cargo door (top hinge edge area).....	57.....		69
Overhead Console Lamps.....	In roof console			
Rear Door Jamb Switch, Suburban.....	RH rear body opening frame	48.....		58
Rear Dome Lamp.....	Rear inside roof area	41.....		50
Rear Window Lockout Switch..	LH front door, forward portion of arm rest area	43.....		52
Remote Outside Rearview Mirror Switch	On front LH door, armrest			
Underhood Reel Lamp.....	RH front side of engine compartment			
Underhood Fuse/Relay Center...	LH rear of engine compartment on fender	5.....		8
CONNECTORS:				
C206.....	Inside LH "A" pillar, lower portion	43.....		52
C207.....	Inside LH "A" pillar, lower portion	43.....		52
C209.....	Inside LH "A" pillar, lower portion	43.....		52
C210.....	At convenience center.....	27.....		32
C215.....	Inside RH "A" pillar, lower portion.....	43.....		53
C298.....	Behind LH side of I/P, near convenience center.....	27.....		32
C301.....	LH front kick panel.....	34.....		41
C302.....	LH front kick panel	34.....		41
C305.....	In headliner at #1 roof bow			
C496.....	RH "B" Pillar.....	46.....		55
C498.....	LH "B" Pillar	46.....		55
GROUND:				
G105 (VIN P)	RH top rear of cylinder head.....	15.....		18
G105 (VIN Z, H, K).....	RH front wheelhouse	1.....		4
G200.....	Behind LH side of I/P, below fuse block			
G400.....	RH "B" pillar	41.....		49
G404.....	On # 1 roof bow			
G405.....	On # 1 roof bow			

INTERIOR LAMPS

COMPONENT	LOCATION	201-PG FIG. CONN
SPLICES:		
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout	
S107 (VIN P)	Engine harness, 5 cm from transmission harness breakout	
S107 (VIN S)	Engine harness, 5 cm from transmission harness breakout	
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout	
S113 (VIN F)	Engine harness, 10 cm into underhood fuse/relay center breakout	
S113 (VIN P)	Engine harness, 10 cm into underhood fuse/relay center breakout	
S113 (VIN S)	Engine harness, 10 cm into underhood fuse/relay center breakout	
S113 (VIN Z, H, K, N).....	Engine harness, approx. 10 cm into underhood power distribution center breakout	
S204	I/P harness, approx. 4 cm left of steering column connector breakout	
S208	Approx. 25 cm from headlamp dimmer switch connector	
S209	Approx. 20 cm from headlamp dimmer switch connector	
S210	Approx. 15 cm from headlamp dimmer switch connector	
S218	I/P harness, approx. 4 cm right of turn signal flasher	
S242	I/P harness, approx. 8 cm right of fuse block breakout	
S242 (Crew Cab, VIN F)	I/P harness approx. 8 cm right of breakout for LH door jamb switch	
S242 (Diesel)	I/P harness, approx. 8 cm right of headlamp dimmer switch breakout	
S246 (Crew Cab)	Crossbody harness, 42 cm left of LH door breakout	
S246 (Utility/Pickup/Extended Cab)	Crossbody harness, 6 cm right of rear body breakout	
S247	Crossbody harness, 6 cm right of LH rear speaker breakout	
S248	Crossbody harness, 6 cm into LH door breakout	
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout	
S259 (Suburban)	Crossbody harness, 17 cm right of door lock relay breakout	
S259 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 25 cm into LH seat breakout	
S262 (Suburban)	Crossbody harness, 32 cm right of LH seat breakout	
S262 (Suburban) (base)	Crossbody harness, 12 cm right of LH seat breakout	
S400 (Rear A/C)	Rear A/C harness, 17 cm from blower motor relays	
S400 (Rear Heat & A/C)	Rear heat and A/C harness, 7 cm from blower motor relays breakout	
S401 (Rear A/C)	Rear A/C harness, 23 cm from blower motor relays	

INTERIOR LAMPS

COMPONENT	LOCATION	201-PG	FIG.	CONN
S401 (Rear Heat & A/C)	Rear heat and A/C harness, 13 cm from blower motor relays breakout			
S410 (2-Door Utility)	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			
S410 (4-Door Utility)	Front to rear lamps harness, 22 cm from RH rear door speaker breakout			
S410 (Suburban).....	Front to rear lamps harness, 12 cm from RH rear door speaker breakout			
S417 (2-Door Utility)	Front to rear body harness, 34 cm from front dome lamp breakout			
S417 (4-Door Utility)	Front to rear body harness, 17 cm into crossbody harness breakout			
S417 (Suburban).....	Front to rear body harness, 23 cm into crossbody harness breakout			
S426 (4-Door utility)	Front to rear body harness, 12 cm from rear dome lamp breakout			
S426 (Suburban).....	Front to rear body harness, 41 cm from rear dome lamp breakout			
S500	Inside left front door harness, near tweeter	43	52	
S502	Inside left front door harness, near tweeter	43	52	

INTERIOR LAMPS**DIAGNOSIS - INTERIOR LIGHTS****TROUBLESHOOTING HINTS:**

1. Check the condition of the CIG LTR FUSE 13, CTSY FUSE 3, HORN MINI FUSE and the PARK LPS FUSE 9. If any fuse(s) is open, then LOCATE and REPAIR source of overload and REPLACE fuse(s).
2. Check that grounds G105, G200, G400 (Suburban, Utility and Crew Cab), and G404/G405 (Suburban W/Auxiliary Lighting) are clean and tight.
3. Check for open filaments in inoperative lamps. If I/P Compartment Box Lamp remains ON with the Switch OFF, then REPLACE the I/P Compartment Box Lamp Assembly. If Underhood Reel Lamp remains ON with the Switch OFF, then REPLACE the Underhood Reel Lamp Assembly.

- Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
- Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

COURTESY LAMP(S)/DOME LAMP(S) ARE INOPERATIVE

TEST	RESULT	ACTION
1. Move Courtesy Lamp Switch to the ON position.	All Courtesy Lamps/Dome Lamp(s) light.	GO TO step 2.
	All Courtesy Lamps and Dome Lamp(s) are inoperative.	GO TO step 3.
	One or more Courtesy Lamps/Dome Lamp(s) are inoperative.	Check for an open in ORN (40) wire between splice and affected lamp(s) or in WHT (156) wire between splice and affected lamp(s). If only one lamp is inoperative and wiring is GOOD, then REPLACE lamp.
2. Move Courtesy Lamp Switch to the OFF position. Make sure that the Dome Lamp Defeat Switch is off. Open and close each door and note whether or not the Courtesy Lamps/Dome Lamp(s) light.	All Courtesy Lamps/Dome Lamp(s) light.	System is operating correctly.
	All Courtesy Lamps/Dome Lamp(s) are completely inoperative.	GO TO step 5.
	Courtesy Lamps/Dome Lamp(s) are inoperative through one or more of the vehicle's Door Jamb Switches.	Check for an open in PPL (328) wire between splice and affected Door Jamb Switch (or Switches) or in BLK (150) wire between splice and affected Door Jamb Switch or Switches (if applicable). If OK, REPLACE affected Door Jamb Switch.
3. Backprobe Front Dome Lamp Connector with a test lamp from ORN (40) wire to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (40) wire between S242 and I/P Fuse Block.
	Test lamp lights.	GO TO step 4.
4. Backprobe Headlamp and Panel Dimmer Switch Connector with a test lamp from cavity "M" to B+.	Test lamp lights.	LOCATE and REPAIR open in WHT (156) wire between Headlamp and Panel Dimmer Switch and S209.
	Test lamp does not light.	Check for an open in BLK (150) wire between Headlamp and Panel Dimmer Switch and G200. If OK, REPLACE Headlamp and Panel Dimmer Switch.

INTERIOR LAMPS

TEST	RESULT	ACTION
5. Backprobe Headlamp and Panel Dimmer Switch Connector with a test lamp from cavity "B" to B+.	Test lamp lights.	LOCATE and REPAIR open in WHT (156) wire between Headlamp and Panel Dimmer Switch and S209.
	Test lamp does not light.	Check for an open in PPL (328) wire between Headlamp and Panel Dimmer Switch and S208. If OK, REPLACE Headlamp and Panel Dimmer Switch.

COURTESY LAMP(S) DOME LAMP(S) REMAIN ON

TEST	RESULT	ACTION
1. Disconnect Headlamp and Panel Dimmer Switch Connector.	Lamps remain ON.	LOCATE and REPAIR short to ground in WHT (156) wire.
	Lamps turn OFF.	GO TO step 2.
2. Reconnect Headlamp and Panel Dimmer Switch Connector. Move Dome Lamp Defeat Switch to ON.	Lamp remain ON.	REPLACE Headlamp and Panel Dimmer Switch.
	Lamps turn OFF.	GO TO step 3.
3. Move Dome Lamp Defeat Switch to OFF. Disconnect each Door Jamb Switch one at a time and note if the Lamps turn OFF as each one is disconnected.	Lamps turn OFF with one of the Door Jamb Switches disconnected.	REPLACE affected Door Jamb Switch.
	Lamps remain ON after all of the Door Jamb Switches are disconnected.	LOCATE and REPAIR short to ground in PPL (328) wire between Headlamp and Panel Dimmer Switch and Door Jamb Switches.

CIGARETTE LIGHTER IS INOPERATIVE

TEST	RESULT	ACTION
1. Disconnect Cigarette Lighter Connector. Connect a test lamp from Cigarette Lighter Connector cavity "A" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (640) wire between I/P Fuse Block and Cigarette Lighter.
	Test lamp lights.	Check for an open in BLK (150) wire between Cigarette Lighter and G200. If OK, REPLACE Cigarette Lighter.

I/P COMPARTMENT BOX LAMP IS INOPERATIVE

TEST	RESULT	ACTION
1. Disconnect I/P Compartment Box Lamp Connector. Connect a test lamp from I/P Compartment Box Lamp Connector cavity "A" to B+.	Test lamp lights.	Check for an open in ORN (40) wire between I/P Compartment Box Lamp and I/P Fuse Block. If OK, REPLACE I/P Compartment Box Lamp.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between I/P Compartment Box Lamp and G200.

INTERIOR LAMPS**UNDERHOOD REEL LAMP IS OPERATIVE**

TEST	RESULT	ACTION
1. Disconnect Underhood Reel Lamp Connector. Connect a test lamp from Underhood Reel Lamp Connector cavity "A" to ground.	Test lamp does not light.	LOCATE and REPAIR open in ORN (740) wire between Underhood Reel Lamp and Underhood Fuse/Relay Center.
	Test lamp lights.	Check for an open in BLK (150) wire between Underhood Reel Lamp and G105. If OK, REPLACE Underhood Reel Lamp.

COMPONENT ILLUMINATION LAMPS ARE INOPERATIVE

TEST	RESULT	ACTION
1. Turn Headlamp and Panel Dimmer Switch to the PARK position.	All Component Illumination Lamps are inoperative.	GO TO step 2.
	One or more Component Illumination Lamps are inoperative.	Check for an open in BRN (9) wire between splice and affected lamp(s) or in BLK (150) wire between splice and affected lamp(s). If OK, REPLACE affected Lamp(s).
2. Disconnect Ash Tray Lamp Connector. Connect a test lamp from Ash Tray Lamp Connector cavity "A" to ground.	Test lamp lights.	LOCATE and REPAIR open in BLK (150) wire between S204 and G200.
	Test lamp does not light.	LOCATE and REPAIR open in BRN (9) wire between Headlamp and Panel Dimmer Switch and S210.

CIRCUIT OPERATION

Voltage is supplied at all times from the CTSY Fuse 3 to the Courtesy Lamps, Dome Lamps and I/P Compartment Box Lamp. The Courtesy and Dome Lamps turn on when a ground path is provided by the Headlight and Panel Dimmer Switch or one of the Door Jamb Switches.

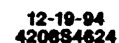
The I/P Compartment Box and Vanity Lamps have their own switches that provide ground paths when their switches close.

UNDERHOOD REEL LAMP

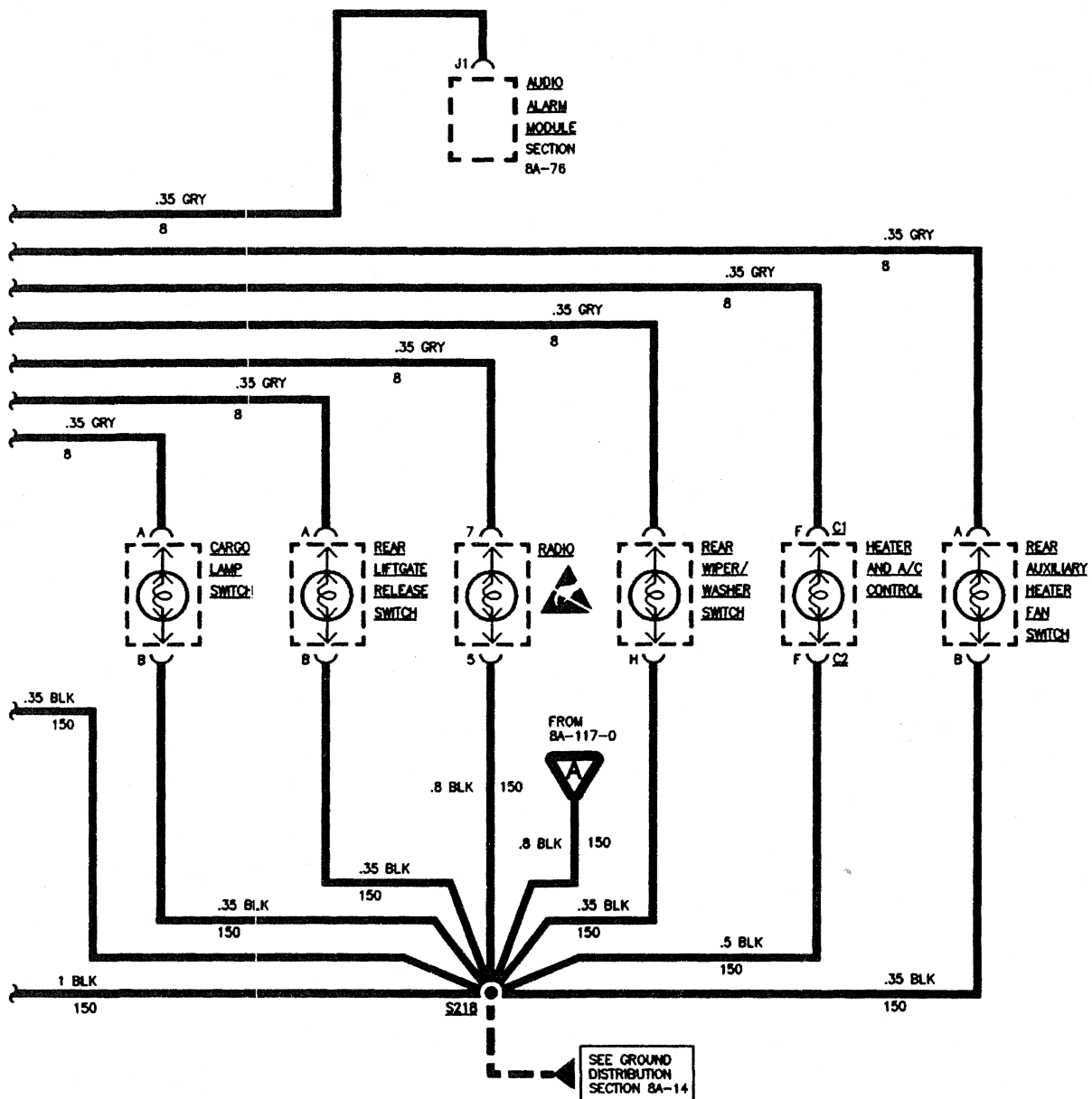
Voltage is supplied at all times to the Underhood Reel Lamp from the Horn Mini Fuse. When the switch is closed a ground path is provided.

COMPONENT ILLUMINATION LAMPS

When the Headlamp and Panel Dimmer Switch is turned to the PARK or HEAD position, voltage is applied through the PARK LPS FUSE 9 and the closed contacts of the Headlamp and Panel Dimmer Switch to the Component Illumination Lamps. Since all of the Component Illumination Lamps are grounded G200, they light.



INSTRUMENT PANEL DIMMING



INSTRUMENT PANEL DIMMING

COMPONENT	LOCATION	201-PG	FIG.	CONN
Ashtray Lamp.....	Behind I/P, at ashtray.....	44.....	56	
Auxiliary Heater and A/C Control Assembly, Front.....	Overhead console	56.....	68.....	202-5
Convenience Center	Under LH side of I/P	4, 33 .	7, 40	
Fog Lamp Switch.....	RH side of instrument cluster.....	50.....	62.....	202-22
Four-Wheel Drive Indicator Lamp.....	Center floor console.....	55.....	67	
Fuse Block.....	Lower LH side of I/P	43.....	55	
Head Light (Off/On) & Panel Dimmer Switch.....	Upper LH side of I/P	27.....	32.....	202-23
Heater and A/C Control	Center of I/P at heater control.....	48.....	60	
Instrument Cluster.....	LH upper end of I/P	32, 46	39, 58	202-9
Radio.....	LH side of I/P	42.....	54.....	202-12,25
Rear Defogger Switch.....	LH side of I/P			202-25
CONNECTORS:				
C230.....	At heater-A/C control	48.....	60.....	202-17
C382.....	At roof bow, near front dome lamp	56.....	68.....	202-20
GROUND:				
G202.....	I/P harness, 15 cm from data link connector	32.....	38	
G400 (Suburban).....	At RH C-pillar			
G400 (Utility).....	At RH C-pillar			
SPLICES:				
S207	I/P harness, 4 cm from radio breakout	43.....	55	
S211	I/P harness, 15 cm from headlight switch breakout.....	44.....	56	
S217	Under LH side of I/P	43.....	55	
S294	Heater harness, near I/P harness lead.....	38.....	49	
S295	Heater harness, near I/P harness lead.....	38.....	49	
S325	Auxiliary heater-A/C control harness, behind roof console.....	56.....	68	
S328	Auxiliary heater - A/C control harness, behind roof console..	56.....	68	
S402 (Suburban/Utility).....	Front to rear body harness, 12 cm from RH speaker breakout.....	68.....	86	

INSTRUMENT PANEL DIMMING**DIAGNOSIS - INSTRUMENT PANEL DIMMING****TROUBLESHOOTING HINTS:**

1. Check the condition of the PARK LPS FUSE 9 and the ILLUM FUSE 14. If either fuse is open, then LOCATE and REPAIR source of overload and REPLACE fuse.
2. Check that G200 and G400 are clean and tight.
3. Check for open filaments in any inoperative lamps. If Radio illumination is inoperative, then remove Radio for REPAIR. If Instrument Cluster Printed Circuit illumination lamps are inoperative and the wiring is OK, then REPLACE the Instrument Cluster Printed Circuit.
4. Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
5. Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

INSTRUMENT PANEL LAMP(S) ARE INOPERATIVE

TEST	RESULTS	ACTION
1. Turn Headlamp and Panel Dimmer Switch to the PARK position. Move Dimmer Switch to the Dimmest position and rotate the switch to the brightest position.	All Instrument Panel Lamps are inoperative.	GO TO step 2.
	Instrument Panel Lamps are lit, but their intensity is not adjustable with the Dimmer Switch.	REPLACE Headlamp and Panel Dimmer Switch.
	One or more Instrument Panel Lamps are inoperative.	Check for an open in GRA(8) wire between splice and affected lamp(s) or in BLK (150) wire between splice and affected lamp(s). If OK, REPLACE affected lamp(s).
2. Move Dimmer Switch to the brightest position. Backprobe Fog Lamp Switch Connector with a digital multimeter from cavity "F" to ground. Measure voltage.	Less than 10.0 volts.	Check for an open or high resistance in DK GRN (44) or GRA (8) wire between Headlamp and Panel Dimmer Switch and S217. If OK, REPLACE Headlamp and Panel Dimmer Switch.
	More than 10.0 volts.	LOCATE and REPAIR open in BLK (150) wire between S204 and G200.

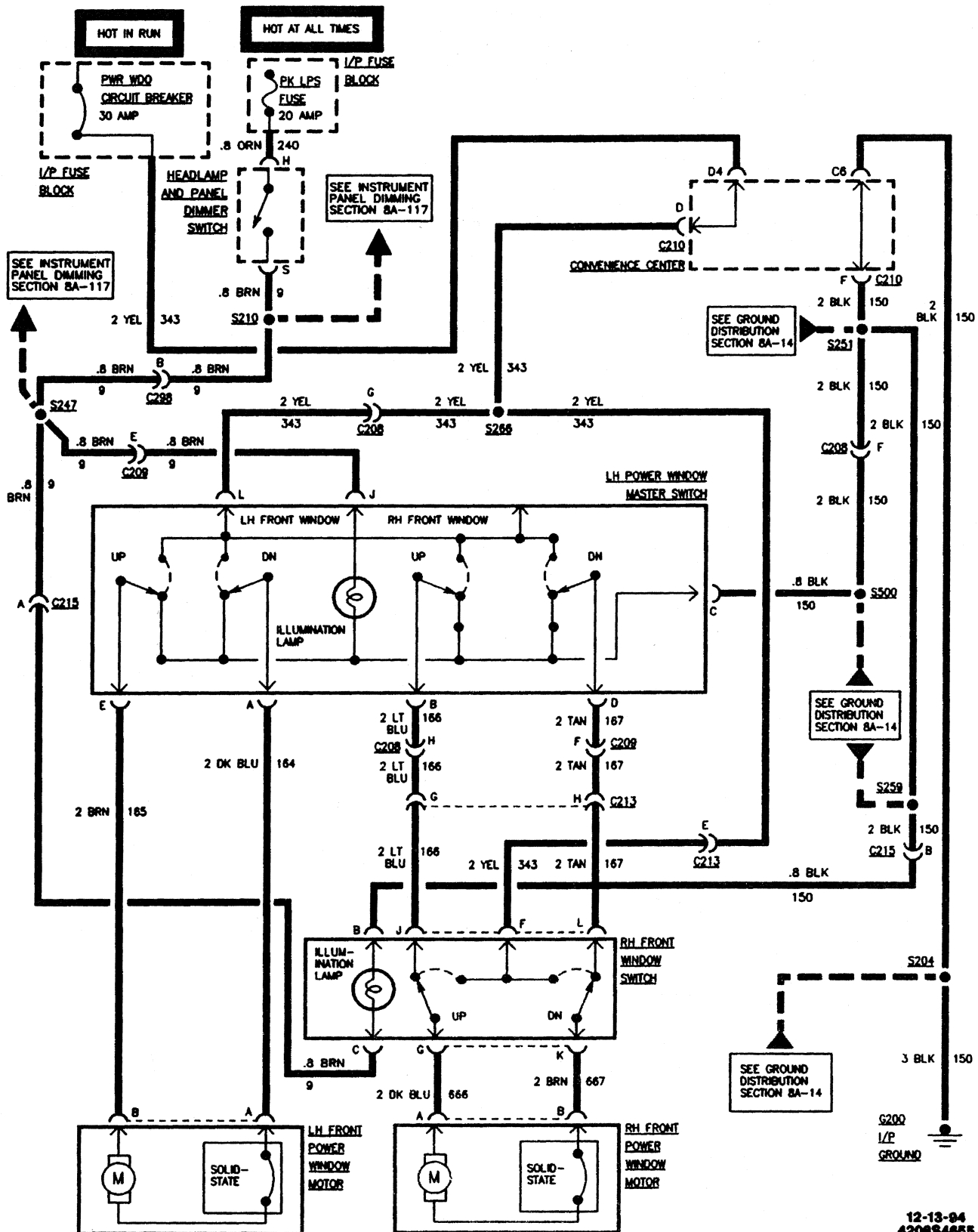
INSTRUMENT PANEL LAMPS REMAIN LIT WITH HEADLAMP AND PANEL DIMMER SWITCH IN THE OFF POSITION

TEST	RESULTS	ACTION
1. Disconnect Headlamp and Panel Dimmer Switch Connector.	Instrument Panel Lamps turn OFF.	REPLACE Headlamp and Panel Dimmer Switch.
	Instrument Panel Lamps remain lit.	LOCATE and REPAIR short to voltage in GRA (8) or DK GRN (44) wire between Headlamp and Panel Dimmer Switch and Instrument Panel Lamps.

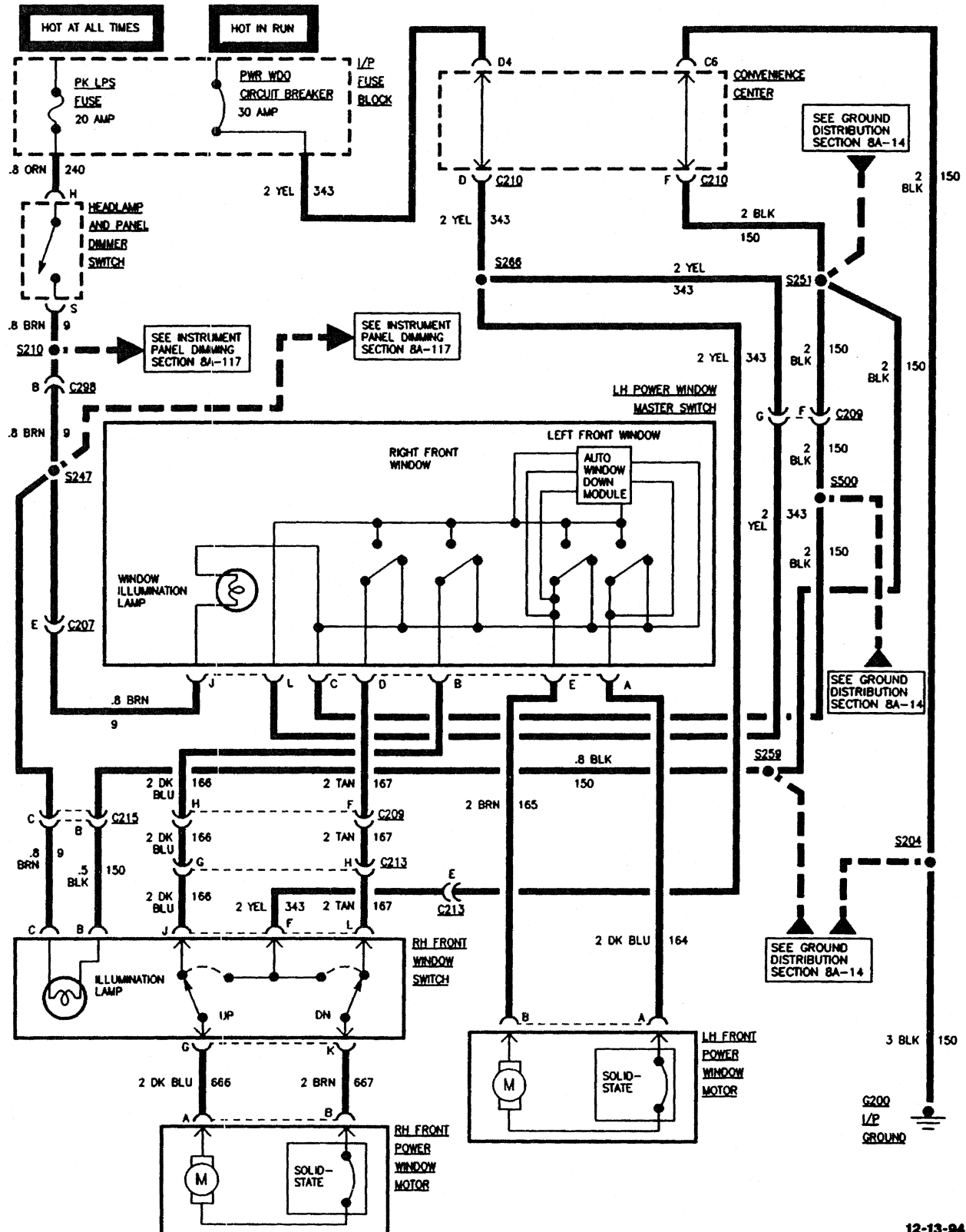
CIRCUIT OPERATION**INTERIOR LAMPS DIMMING**

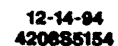
With the Headlamp and Panel Dimmer Switch in PARK or HEAD, voltage is supplied to the Instrument Panel Dimmer Switch. This voltage goes through the

ILLUM FUSE 14 to the illumination lamps. All of the lamps are permanently grounded, so they light. The intensity of the illumination lamps is controllable Via the Dimmer Switch. The Rheostat in the Dimmer Switch varies voltage to the lamps, which in turn, also varies lamp intensity.



POWER WINDOWS UTILITY





12-14-84
4208S5155

POWER WINDOWS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P Harness.....	Under LH side of I/P, on bulkhead.....	34.....	41	
Fuse Block - I/P Harness.....	Lower LH side of I/P.....	26.....	31	
Headlamp (Off/On) & Panel Dimmer Switch.....	Upper LH side of I/P.....	26.....	31	
Window Motor, LH Front.....	Inside RH front door.....	43.....	52	
Window Motor, RH Rear.....	Inside RH rear door, lower forward portion, slightly below speaker.....	45.....	54	
Window Motor, RH Front.....	Inside LH front door.....	43.....	52	
Window Switch, LH Rear.....	On LH rear door trim panel.....	45.....	54	
Window Switch, RH Front.....	On RH trim panel.....	44.....	53	
CONNECTORS:				
C206.....	Inside LH "A" pillar, lower portion.....	43.....	52	
C207.....	Inside LH "A" pillar, lower portion.....	43.....	52	
C208.....	Inside LH "A" pillar, lower portion.....	43.....	52	
C209.....	Inside LH "A" pillar, lower portion.....	43.....	52	
C210.....	At convenience center.....	27.....	32	
C213.....	Inside RH "A" pillar, lower portion.....	43.....	53	
C215.....	Inside RH "A" pillar, lower portion.....	43.....	53	
C298.....	Behind LH side of I/P, near convenience center.....	27.....	32	
C497.....	RH "B" Pillar.....	46.....	55	
C498.....	LH "B" Pillar.....	46.....	55	
C499.....	LH "B" Pillar.....	46.....	55	
GROUNDS:				
G200.....	Behind LH side of I/P, below fuse block			
SPLICES:				
S204.....	I/P harness, approx. 4 cm left of steering column connector breakout			
S210.....	Approx. 15 cm from headlamp dimmer switch connector			
S247.....	Crossbody harness, 6 cm right of LH rear speaker breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout			
S259 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 25 cm into LH seat breakout			
S266 (Utility/Pickup/Extended Cab).....	Crossbody harness, 6 cm right of I/P harness breakout			
S500.....	Inside left front door harness, near tweeter.....	43.....	52	
S501.....	Inside left front door harness, near tweeter.....	43.....	52	

POWER WINDOWS**COMPONENT****LOCATION****201-PG FIG. CONN**

S502 Inside left front door harness, near tweeter 43 52

DIAGNOSIS - POWER WINDOW**TROUBLESHOOTING HINTS:**

1. Check condition of PWR WDO circuit breaker. If circuit breaker is in good condition, use the following diagnostic procedures.
2. Check condition of PK LPS fuse, if fuse is open, locate and repair source of overload. Replace fuse.
3. Check for mechanical failures or binding.
4. If the Auto Down feature does not operate, replace the LH Window Master Switch.

POWER WINDOW SWITCH ILLUMINATION LAMP(S) DO NOT LIGHT

TEST	RESULT	ACTION
1. Place Headlamp and Panel Dimmer Switch in " PARK." Disconnect suspect window switch. Connect test lamp from CKT 9 to ground.	Test lamp does not light.	Repair open in CKT 9.
	Test lamp lights.	Go to Step 2.
2. Connect test lamp from CKT 150 to CKT 9.	Test lamp does not light.	Repair open in CKT 150.
	Test lamp lights.	Replace suspect switch.

POWER WINDOWS ONLY OPERATE FROM DRIVER'S WINDOW SWITCH (SUBURBAN, CREW CAB)

TEST	RESULT	ACTION
1. Place ignition switch in RUN. Connect test lamp from CKT 1307 at affected window switch to ground.	Test lamp lights.	REPLACE respective window switch.
	Test lamp does not light.	Repair open in CKT 1307.

POWER WINDOWS DO NOT OPERATE FROM DRIVER'S WINDOW SWITCH (SUBURBAN, CREW CAB)

TEST	RESULT	ACTION
1. Place ignition switch in RUN. Disconnect LH Master Window Switch. Connect test lamp from CKT 343 to ground.	Test lamp lights.	REPLACE Master Window Switch.
	Test lamp does not light.	Repair open in CKT 1307.

NONE OF THE POWER WINDOWS OPERATE

TEST	RESULT	ACTION
1. Place ignition switch in "RUN." Disconnect LH Master Window Switch. Connect test lamp from CKT 343 at switch to ground.	Test lamp does not light.	Repair open in CKT 343.
	Test lamp lights.	Go to Step 2.
2. Connect test lamp CKT 343 to CKT 150 at switch.	Test lamp does not light.	Repair open in CKT 150.
	Test lamp lights.	REPLACE LH Master Window Switch.

POWER WINDOWS

LH FRONT WINDOW DOES NOT OPERATE

TEST	RESULT	ACTION
1. Disconnect LH Front Window Motor. Ignition Switch in "RUN." Press LH Front Window Switch in "UP" position. Connect test lamp from CKT 164 at LH Front Window Motor to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Check/Repair open in CKT 164. If OK, REPLACE the LH Window Master Switch.
2. Connect test lamp from CKT 164 to CKT 165 at the LH Front Window Motor.	Test lamp lights.	REPLACE LH LH Front Window Motor.
	Test lamp does not light.	Check/Repair open in CKT 165. If OK, REPLACE the LH Window Master Switch.

RH POWER WINDOW ONLY OPERATES FROM DRIVER'S SIDE WINDOW SWITCH (PICKUP, UTILITY)

TEST	RESULT	ACTION
1. Place ignition switch in ACC position. Connect test lamp from CKT 343 at RH window switch connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in CKT 343 from RH window switch connector to splice S266.
2. Move RH window switch to UP position. Connect test lamp from CKT 666 at RH window switch connector to ground.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	REPLACE RH window switch.
3. Move RH window switch to DOWN position. Connect test lamp from CKT 667 at RH window switch connector to ground.	Test lamp does not light.	REPLACE RH window switch.

RH POWER WINDOW DOES NOT OPERATE FROM EITHER SWITCH (PICKUP, UTILITY)

TEST	RESULT	ACTION
1. Place ignition switch in ACC position. Position and hold RH window switch to UP. Connect test lamp from CKT 666 at RH window switch connector to ground.	Test lamp lights.	GO to Step 2.
	Test lamp does not light.	GO to Step 3.
2. Connect test lamp from CKT 667 to CKT 666 at RH window motor connector.	Test lamp lights.	REPLACE RH window motor.
	Test lamp does not light.	GO to Step 4.
3. Connect test lamp from CKT 343 at LH window switch connector to ground.	Test lamp lights.	GO to Step 4.
	Test lamp does not light.	LOCATE and REPAIR open in CKT 343 from LH window switch connector to splice S266.
4. Connect test lamp from CKT 343 to CKT 166 at LH window switch connector.	Test lamp lights.	GO to Step 6.
	Test lamp does not light.	GO to Step 5.

POWER WINDOWS

TEST	RESULT	ACTION
5. Connect test lamp from CKT 343 to CKT 150 at LH window switch connector.	Test lamp lights.	REPLACE LH window switch.
	Test lamp does not light.	LOCATE and REPAIR open in CKT 150 from LH window switch connector.
6. Connect test lamp from CKT 343 to CKT 167 at LH window switch connector.	Test lamp lights.	GO to Step 6.
	Test lamp does not light.	REPLACE LH window switch.
7. Connect test lamp from CKT 343 to CKT 166 and then to CKT 167 at RH window switch connector.	Test lamp lights at both wires (166 and 167).	REPLACE LH window switch.
	Test lamp lights at only one wire or not at all.	LOCATE and REPAIR open wires (166 and 167) from RH window switch connector to master switch connector.

CIRCUIT OPERATION

CREW CAB, SUBURBAN, UTILITY

A permanent magnet motor operates each of the Power Windows. Each Motor raises or lowers the glass when voltage is supplied to it. The direction of the Motor turns depends on the polarity of the supply voltage provided through the switch.

The LH Master Window Switch controls all of the Window Motors. Each window also has its own control switch.

Each Motor is protected by a built-in circuit breaker. If a Window Switch is held too long with the window obstructed or after the window is fully up or down, the circuit breaker opens the circuit. The circuit breaker resets automatically as it cools.

When the Ignition Switch is in RUN or ACC, battery voltage is supplied to the LH Master Window Switch and Window Lockout Switch through CKT 343.

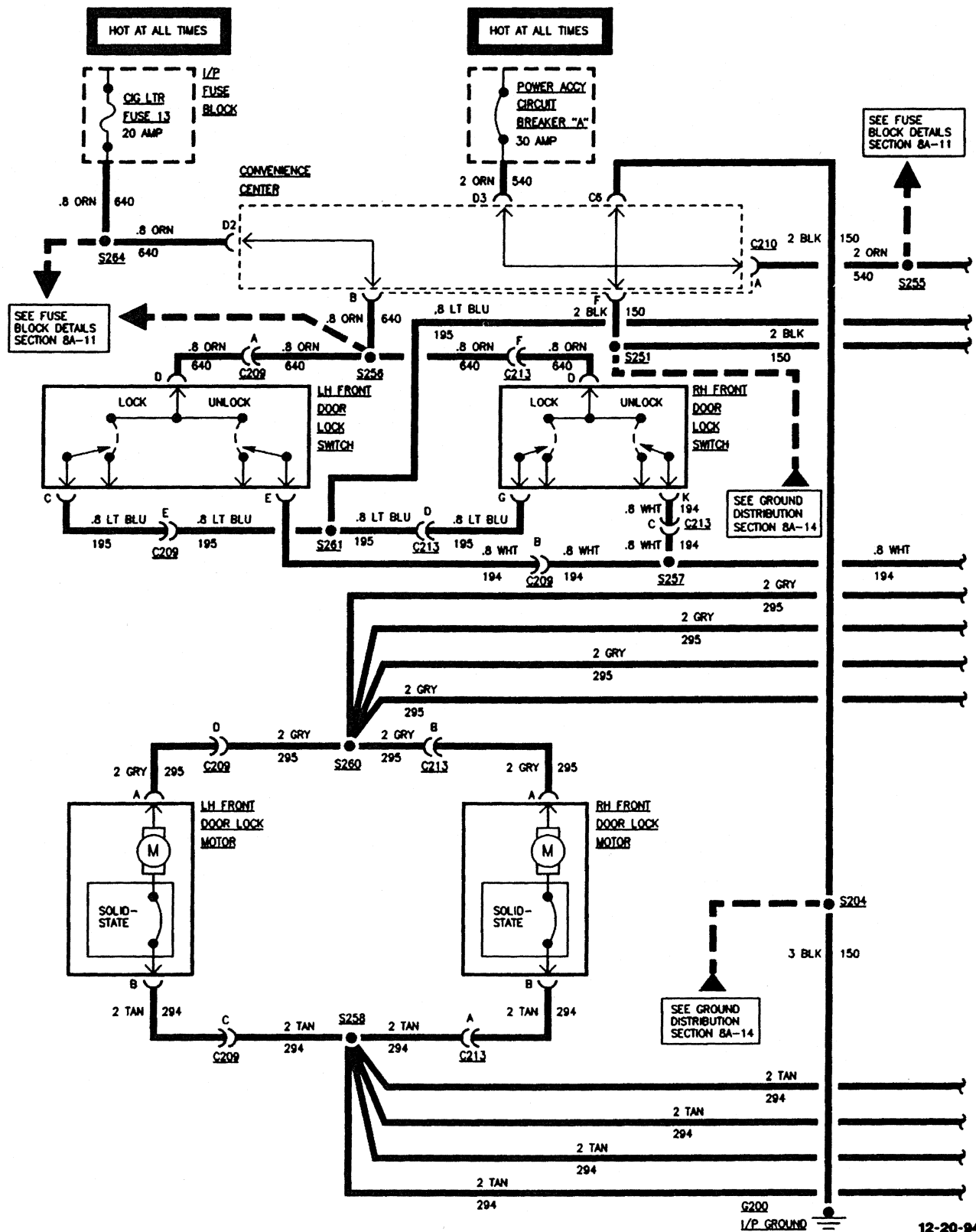
When any of the UP Switches are operated, battery voltage is supplied to the Window Motor and is grounded through the DN contact. The Motor runs to window up. When any of the DN Switches are battery voltage is supplied to the Window Motor in the opposite direction. The Window Motor is grounded through the UP contact. The Motor runs to drive the window down.

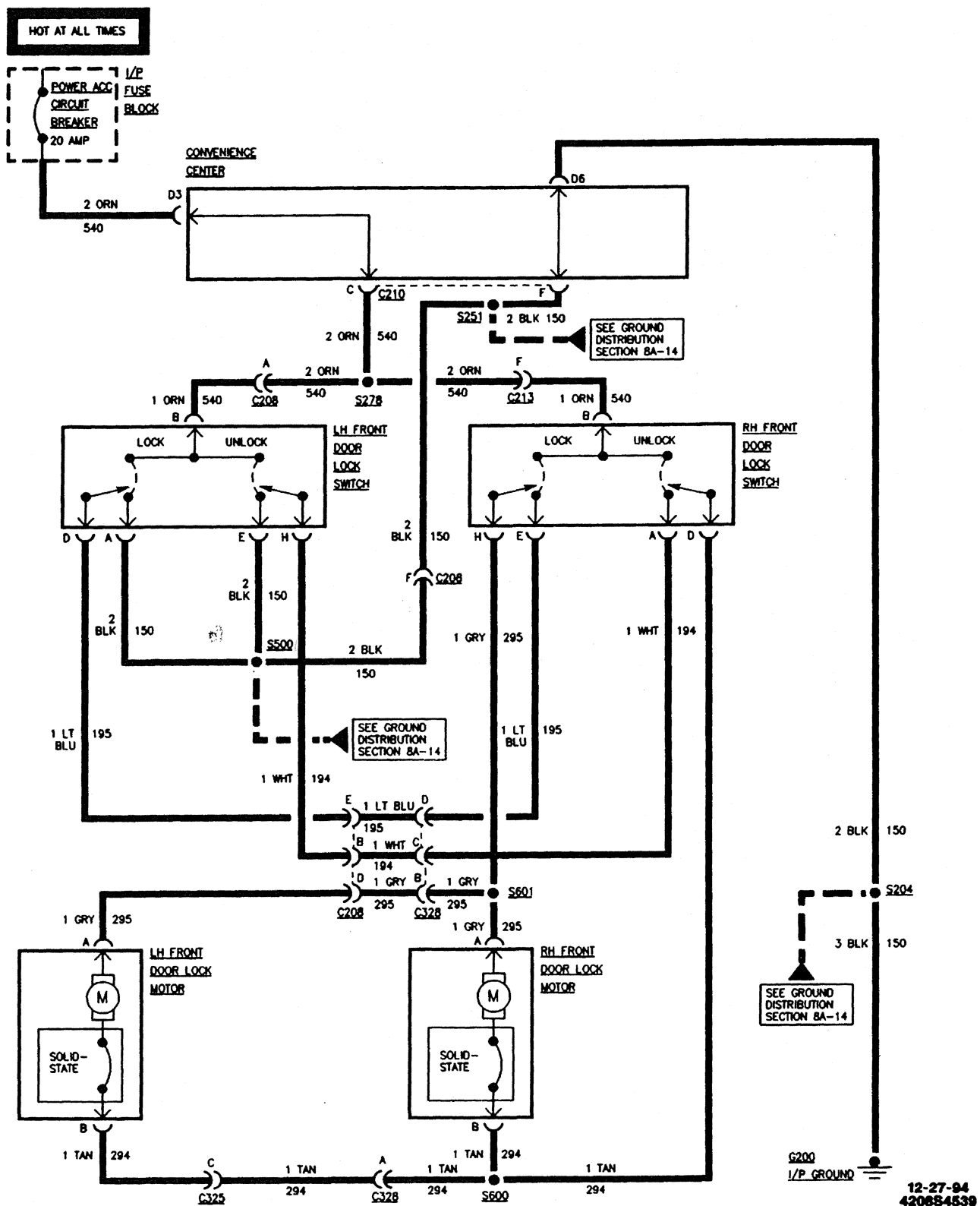
MASTER WINDOW SWITCH OPERATION

When the Ignition Switch is in RUN or ACC, battery voltage is supplied to the Window Switch through the PWR WDO Circuit Breaker and the YEL (343) wire. When the UP Switch in the Window Switch is operated, battery voltage is supplied to the Window Motor through the DK BLU (1307) wire. The Motor is grounded through the BRN (165) wire, DN contact in the Window Switch, the TAN (167) wire and the DN contact in the Master Door Lock/Power Window Switch Assembly. The Motor runs to drive the window up. When the DN Switch in the Window Switch is operated, battery voltage is supplied to the Window Motor in the opposite direction through the BRN (165) wire. The Window Motor is grounded through the DK BLU (164) wire, the UP contact in the Window Switch, the DK BLU (166) and the UP contact in the Master Door Lock/Power Window Switch Assembly. The Motor runs to drive the window down.

FRONT DOOR WINDOW SWITCH LAMPS

The front door power window switches have illumination lamps built into the switches. When the Headlamps or Park lamps are turned "ON," voltage is supplied to the switches through CKT 9.



**POWER DOOR LOCKS
(2 DOOR)**

POWER DOOR LOCKS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center	Under LH side of I/P, on bulkhead	34	41	
Door Lock Motor, RH Rear Cargo door	Inside door, lower portion, near free edge	58	70	
Door Lock Motor, LH Front.....	Inside door, near free edge latch	43	52	
Door Lock Motor, RH Front.....	At RH end of I/P			
Door Lock Motor, LH Rear	Inside door, near free edge latch	45	54	
Door Lock Motor, RH Rear.....	Inside door, near free edge latch	45	54	
Door Lock Switch, LH Front....	On door trim panel	43	52	
Door Lock Switch, RH, Front..	On door trim panel	43	52	
Door Lock Relay.....	Under center portion of I/P, near RKE module.....	42	51	
CONNECTORS:				
C209	Inside LH "A" pillar, lower portion	43	52	
C210	At convenience center	27	32	
C213	Inside RH "A" pillar, lower portion	43	53	
C302	LH front kick panel	34	41	
C497	At RH "B" pillar.....	46	55	
C499	LH "B" Pillar	46	55	
GROUND:				
G200.....	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, 4 cm left of steering column breakout			
S251 (Suburban) (base only).....	Crossbody harness, 8 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout			
S255 (Suburban/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 12 cm right of I/P harness breakout			
S256	Crossbody harness, 21 cm right of I/P harness breakout			
S257	Crossbody harness, 14 cm right of door lock relay breakout			
S258	Crossbody harness, 6 cm right of door lock relay breakout			
S260	Crossbody harness, 6 cm into LH seat breakout			
S261	Crossbody harness, 5 cm right of LH seat breakout			
S264	I/P harness, approx. 16 cm right of I/P cluster connector			

POWER DOOR LOCKS**DIAGNOSIS - POWER DOOR LOCKS****TROUBLESHOOTING HINTS:**

1. Check to see that PWR - ACCY Circuit Breaker and CIG LTR Fuse 13 are not blown. If fuse is blown, locate and repair source of overload, then replace fuse. If Circuit Breaker is open, locate and repair source of

overload, then check breaker for proper operation. If breaker does not reset, replace breaker.

2. Refer to the 1995 C/K Service Manual for diagnosis and repair of all non-electrical system components.

POWER DOOR LOCKS DO NOT OPERATE FROM EITHER SWITCH (2-DOOR)

TEST	RESULT	ACTION
1. Connect test lamp from ORN (540) wire at LH lock switch connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (540) wire between splice S278 and the convenience center connector or from convenience center connector to fuse block.
2. Connect test lamp from ORN (540) wire to BLK (150) wire(s) at LH lock switch connector.	Test lamp lights.	REPLACE LH lock switch.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire(s) from lock switch connector to splice S500 or from splice S500 to connector C208 or from Connector C208 to splice S251 or from splice S2512 to convenience center connector C210 or from convenience center to ground G200.

BOTH SWITCHES ONLY OPEN ONE DOOR LOCK (2 DOOR)

TEST	RESULT	ACTION
1. Move one of the lock switches to UNLOCK position. Disconnect connector at motor that is not working. Connect test lamp from GRA (295) wire at lock motor connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in GRY (295) wire from lock motor connector to splice S601.
2. Connect test lamp from GRA (295) wire to TAN (294) wire at inoperative lock motor connector.	Test lamp lights.	REPLACE lock motor.
	Test lamp does not light.	LOCATE and REPAIR open in TAN (294) wire from lock motor connector to splice S600.

POWER DOOR LOCKS**NONE OF THE DOOR LOCK MOTORS LOCK OR UNLOCK (4 DOOR)**

TEST	RESULT	ACTION
1. Connect test lamp from ORN (540) wire at LH door lock switch connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (540) wire between door lock relay connector and convenience center connector of from ORN (640) wire at convenience center to fuse block.
2. Connect test lamp from ORN (540) wire to BLK (150) wire at door lock relay connector.	Test lamp lights.	REPLACE LH door lock switch.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between door lock relay connector and splice S251 or between splice S251 and convenience center connector. Also check BLK (150) wire from convenience center to I/P ground G200.
3. Connect test lamp from TAN (294) or GRA (295) wire(s) at door lock relay connector to ground. Move either door lock switch to the lock or unlock position.	Test lamp lights on both wires.	LOCATE and REPAIR open in TAN (294)/GRA (295) wire(s) between door lock relay connector and splice S260 or S258.
	Test lamp does not light on one or both wires.	REPLACE door lock relay.

BOTH SWITCHES ONLY OPEN ONE DOOR LOCK (4 DOOR)

TEST	RESULT	ACTION
1. Move one of lock switches to UNLOCK position. Disconnect door lock motor connector at motor that is not working. Connect test lamp from GRA (295) wire at lock motor connector to ground.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in GRA (295) wire from lock motor connector to splice S260.
2. Connect test lamp from GRA (295) wire to TAN (294) wire at inoperative lock motor connector.	Test lamp lights.	REPLACE door lock motor.
	Test lamp does not light.	LOCATE and REPAIR open in TAN (294) wire from lock motor connector to splice S258.

POWER DOOR LOCKS ONLY WORK FROM ONE LOCK SWITCH (ALL VEHICLES)

TEST	RESULT	ACTION
1. Connect test lamp from ORN (640) wire at inoperative lock switch connector to ground.	Test lamp lights.	REPLACE inoperative lock switch.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (640) wire from lock switch to splice S256.

POWER DOOR LOCKS**CARGO DOOR LOCK MOTOR DOES NOT LOCK AND/OR UNLOCK (SUBURBAN)**

TEST	RESULT	ACTION
1. Open rear cargo doors. Connect test lamp from TAN (294) or GRA (295) wire(s) at cargo door contact button connector to ground. Move either door lock switch to the lock or unlock position.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in TAN (294) or GRA (295) wire(s) from contact button connector to splice(s) S260 or S258.
2. Close cargo doors. Connect test lamp from GRA (295) wire at door lock motor connector to ground. Move one lock switch to UNLOCK position.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	LOCATE and REPAIR open in GRA (295) wire from door lock motor connector to door mounted contact button connector.
3. Connect test lamp from GRA (295) wire to TAN (294) wire at door lock motor connector. Move one lock switch to LOCK and UNLOCK positions.	Test lamp lights in both positions.	REPLACE cargo door lock motor.
	Test lamp does not light in one or both positions.	LOCATE and REPAIR open in TAN (294) wire from door lock motor connector to door mounted contact button connector.

CIRCUIT OPERATION

When a Door Lock Switch is operated, all of the doors will lock or unlock. Each lock can also be operated manually. The locks are operated by reversible motors that receive voltage from the Power-ACCY Circuit Breaker. The Door Lock Switches operate to turn the Motors on by supplying battery voltage to one of the terminals and ground the other terminal.

When either Door Lock Switch is moved to the LOCK position, it completes the circuit to the Motors. Voltage is supplied to the GRA (295) wire and to the Door Lock Motors, which are grounded by the TAN (294) wire from the other terminal of the Motor through the other switch contact and through the Door Lock Relay to the BLK (150) wire and ground G200. The Motor in each door runs to operate the Door Locks. When the Door Lock Switch is released, the circuit is opened and the Motors turn off.

A similar action occurs with either of the Door Lock Switches closing to the UNLOCK position. Now the TAN (294) wires to the Motors supply battery voltage and the GRA (295) wires are grounded. The polarity of the voltage to the Motors has reversed. The Motors run in the opposite direction to unlock the doors.

The Door Lock Switches are usually closed for just a moment. If the Door Lock Switches are held closed, a circuit breaker in each Motor will open to protect against damage. The circuit breakers close automatically when they cool off.

CREW CAB AND SUBURBAN

When a Door Lock Switch is operated, all of the doors will lock or unlock. Each lock can also be operated manually. The locks are operated by reversible motors that

receive voltage from the Power-ACCY Circuit Breaker. The Door Lock Switches operate to turn the Motors on by supplying battery voltage to one of the terminals and ground the other terminal.

When either Door Lock Switch is moved to the LOCK position, it completes the circuit to the Motors. Voltage is supplied to the GRA (295) wire and to the Door Lock Motors, which are grounded by the TAN (294) wire from the other terminal of the Motor through the other switch contact and through the Door Lock Relay to the BLK (150) wire and ground G202. The Motor in each door runs to operate the Door Locks. When the Door Lock Switch is released, the circuit is opened and the Motors turn off.

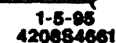
A similar action occurs with either of the Door Lock Switches closing to the UNLOCK position. Now the TAN (294) wires to the Motors supply battery voltage and the GRA (295) wires are grounded. The polarity of the voltage to the Motors has reversed. The Motors run in the opposite direction to unlock the doors.

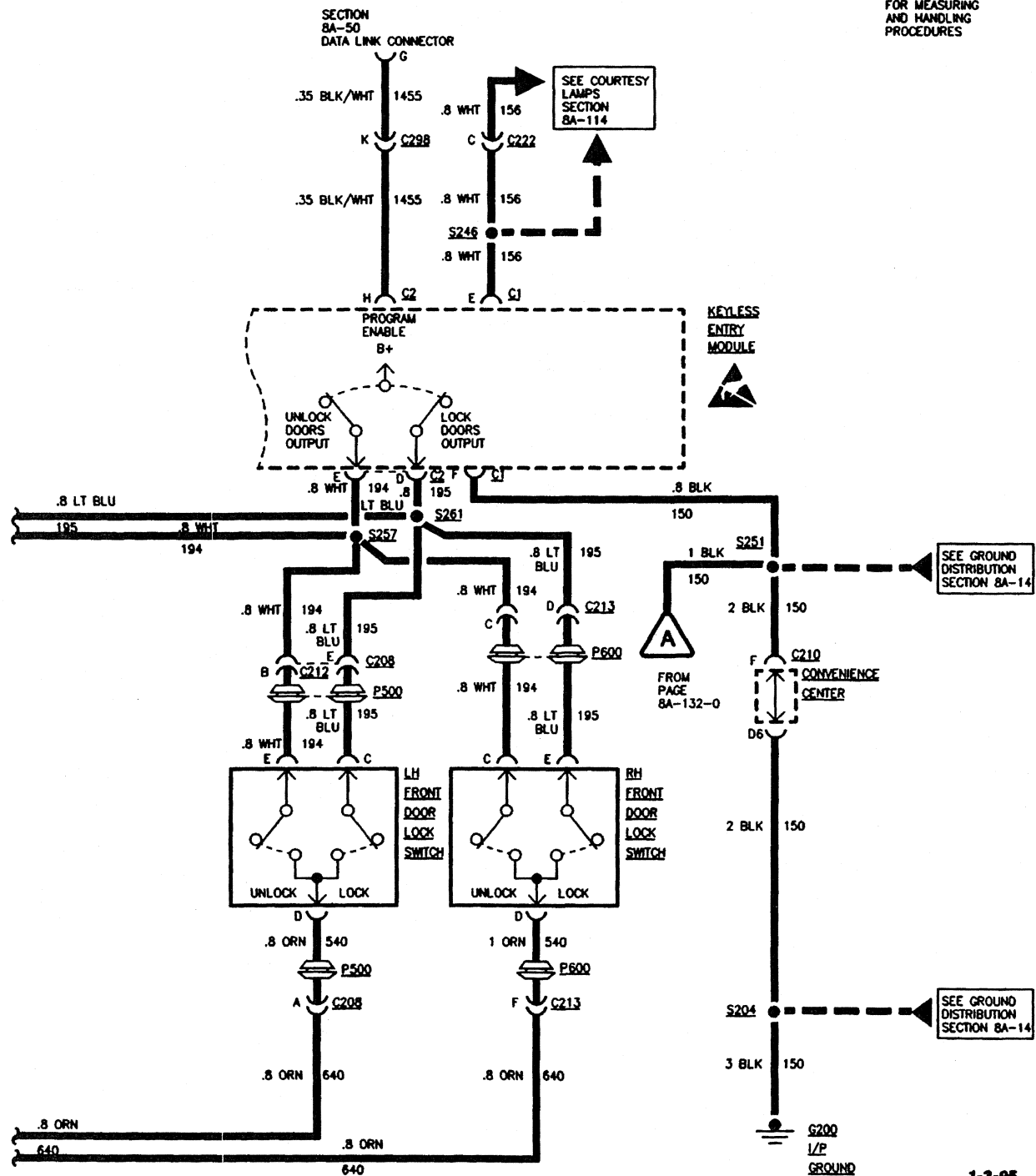
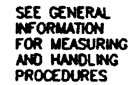
The Door Lock Switches are usually closed for just a moment. If the Door Lock Switches are held closed, a circuit breaker in each Motor will open to protect against damage. The circuit breakers close automatically when they cool off.

REAR CARGO DOORS (SUBURBAN)

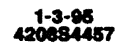
The Rear Cargo Doors must be fully closed for the Door Lock Motor to operate. The Door Lock Motor is located in the right rear cargo door. Contact buttons are located on the cargo door opening on the body and also on the right rear cargo door.

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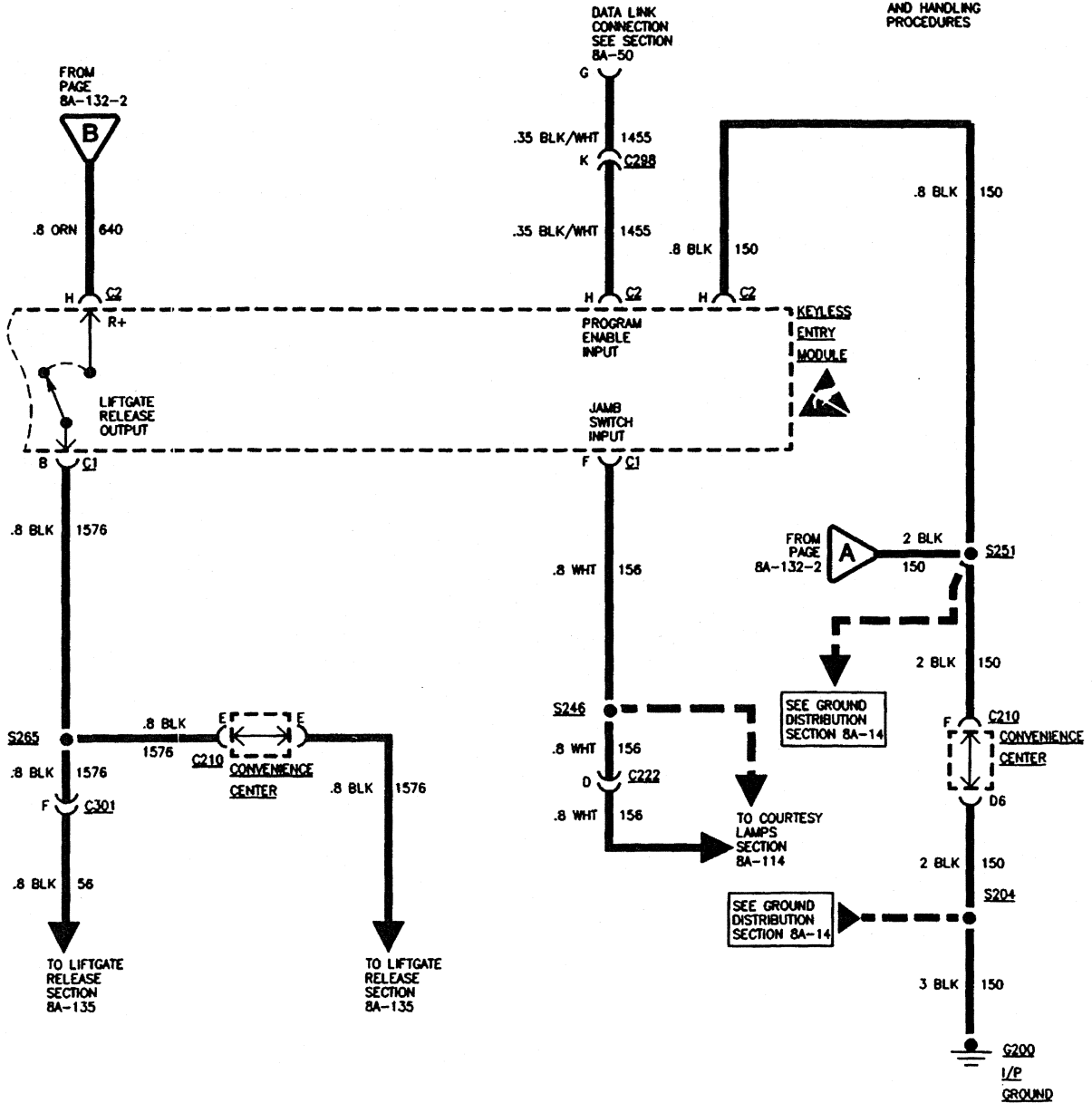
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REMOTE KEYLESS ENTRY 4-DOOR VEHICLES



SEE PAGE 8A-3-4
FOR MEASURING
AND HANDLING
PROCEDURES



REMOTE KEYLESS ENTRY

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead	34	.....	41
Door Lock Motor, LH Front.....	Inside door, near free edge latch	43	.....	52
Door Lock Motor, LH Rear.....	Inside door, near free edge latch	45	.....	54
Door Lock Motor, RH Front	Inside door, near free edge latch	43	.....	52
Door Lock Motor, RH Rear.....	Inside door, near free edge latch	45	.....	54
Door Lock Motor, RH Rear				
Cargo Door	Inside door, lower portion, near free edge.....	58	.....	70
Door Lock Relay	Under center portion of I/P, near RKE module.....	42	.....	51
Door Lock Switch, LH Front ...	On door trim panel	43	.....	52
Door Lock Switch, RH Front...	On door trim panel	43	.....	52
Fuse Block - I/P Harness.....	Lower LH side of I/P.....	26	.....	31
Remote Keyless Entry Module.	Under center portion of I/P			
CONNECTORS:				
C208	Inside LH "A" pillar, lower portion	43	.....	52
C209	Inside LH "A" pillar, lower portion	43	.....	52
C210	At convenience center.....	27	.....	32
C213	Inside RH "A" pillar, lower portion	43	.....	53
C222	At convenience center.....	34	.....	41
C299	Behind RH side of I/P, above HVAC evaporator housing	31	.....	37
C301	LH front kick panel	34	.....	41
C302	LH front kick panel	34	.....	41
C497	RH "B" Pillar.....	46	.....	55
C499	LH "B" Pillar.....	46	.....	55
GROMMETS:				
G200	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S213	I/P harness, approx. 16 cm right of fuse block breakout			
S213 (Crew Cab, VIN F).....	I/P harness approx. 16 cm right of breakout for LH door jamb switch			
S213 (Diesel).....	I/P harness, approx. 16 cm right of headlamp dimmer switch breakout			
S246 (Crew Cab)	Crossbody harness, 42 cm left of LH door breakout			
S246 (Utility/Pickup/Extended Cab)	Crossbody harness, 6 cm right of rear body breakout			

REMOTE KEYLESS ENTRY

COMPONENT	LOCATION	201-PG FIG. CONN
S251 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 6 cm left of LH seat breakout	
S255 (Suburban/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 12 cm right of I/P harness breakout	
S257	Crossbody harness, 14 cm right of door lock relay breakout	
S258	Crossbody harness, 6 cm right of door lock relay breakout	
S255 (Suburban/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 12 cm right of I/P harness breakout	
S261	Crossbody harness, 5 cm right of LH seat breakout	
S265 (Suburban).....	Crossbody harness, 6 cm left of LH door breakout	
S265 (Utility).....	Crossbody harness, 26 cm right of I/P harness breakout	

DIAGNOSIS - REMOTE KEYLESS ENTRY**TROUBLESHOOTING HINTS:**

1. Check that ground G200 is clean and tight.
2. Check the GAUGES Fuse by observing the Instrument Cluster gages.
3. Check CIG LTR Fuse by operating the CIGAR LIGHTER.
4. Check condition of PWR ACC Circuit Breaker for an open condition. If breaker is open, locate and repair source of overload.
5. Always check terminal contact before replacing any component.
6. If a second transmitter is available, try it. If it works, change the batteries in the first transmitter and try again. If it still doesn't work, it is defective.
7. Check Portable Transmitter battery terminals. They should be clean and make good contacts with the battery.
8. If in doubt as to the condition of the Transmitter batteries, replace them with new ones. Check battery voltage with a DVOM may give results. Refer to Section 9K for Remote Keyless Entry Module access and additional information. Check for a broken (or partially broken) wire inside of the insulation which could cause system failure but prove "GOOD" in continuity /voltage check (see "Troubleshooting Procedure," page 8A-4-0).

KEYLESS ENTRY DOES NOT OPERATE

TEST	RESULT	ACTION
1. Does the RH door lock operate from either of the vehicle's power door lock switches?	Yes	GO to step 2.
	No	REFER to 8A-130 for diagnosis of power door locks.
2. Does the rear window operate from vehicle's rear window release switch?	Yes	GO to step 3.
	No	REFER to rear window release in 8A-135.
3. Does LH power door lock operate from either of vehicle's power door lock switches?	Yes	GO to step 8.
	No	GO to step 4.

REMOTE KEYLESS ENTRY

TEST	RESULT	ACTION
4. Jumper keyless entry module connector C1 terminal D to ground. Does LH power door lock now lock from either power door lock switch?	Yes	GO to step 5.
	No	GO to step 6.
5. Connect ohmmeter between BLK (150) wire at keyless entry module connector C1 and ground. Is ground okay?	Yes	REPLACE keyless entry module and reprogram replacement module.
	No	REPAIR open in BLK (150) wire.
6. Measure voltage at terminal A GRY (295) wire of LH front door lock motor with either power door lock switch held in lock. Is battery voltage present?	Yes	GO to step 7.
	No	REPAIR open GRY (295) wire.
7. Measure voltage between terminal B TAN (294) wire and A GRY (295) wire at LH front door lock motor with either power door lock switch held in lock. Is battery voltage present?	Yes	REPLACE LH door lock motor.
	No	REPAIR open in TAN (294 or 694) wire from motor connector to keyless entry module connector.
8. Is luggage compartment release function only function not operating?	Yes	GO to "Rear Window Release Function Not Operating, All Other Functions Operate" troubleshooting chart.
	No	Go to step 9.
9. Do any transmitter functions operate?	Yes	GO to step 10.
	No	GO to "Transmitter Functions Do Not Operate" troubleshooting chart.
10. Obtain known good transmitter. Jumper program connector. Operate transmitter by pressing a single button once. Disconnect jumper from program connector. Does known good transmitter operate all remote keyless entry functions?	Yes	GO to step 12.
	No	REPAIR open in WHT (194) wire and reprogram keyless entry module.
11. Measure voltage at terminal E WHT (194) wire at keyless entry module connector C2 while pressing either of power door lock switches in unlock position. Is battery voltage present?	Yes	GO to step 12.
	No	REPAIR open in WHT (194) wire and reprogram keyless entry module.
12. Measure voltage at terminal D LT BLU (195) wire at keyless entry module connector C2 while pressing either of power door lock switches in lock position. Is battery voltage present?	Yes	REPLACE keyless entry module. Reprogram replacement keyless entry module to portable transmitter.
	No	REPAIR open in LT BLU (195) wire and reprogram keyless entry module.

REMOTE KEYLESS ENTRY**KEYLESS ENTRY DOES NOT OPERATE PROPERLY**

TEST	RESULT	ACTION
1. Place Ignition Switch in "RUN." Disconnect Keyless Entry Module. Test lamp CKT 39 to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Repair open in CKT 39.
2. Test lamp CKT 540 at connector C1 Term "A" to ground.	Test lamp lights.	Go to Step 3.
	Test lamp does not light	Repair open in CKT 540. Reprogram Keyless Entry Module.
3. Test lamp CKT 39 to CKT 150.	Test lamp lights.	Go to Step 4.
	Test lamp does not light.	Repair open in CKT 150.
4. Test lamp CKT 694 to battery.	Test lamp lights.	Go to Step 5.
	Test lamp does not light.	Repair open in CKT 694.
5. Place RH Front Door Lock Switch in "LOCK" position. Test lamp CKT 195 to ground.	Test lamp lights.	Go to Step 6.
	Test lamp does not light.	Repair open in CKT 195.
6. Place RH Front Door Lock Switch in "UNLOCK" position. Test lamp CKT 194 to ground.	Test lamp lights.	Go to Step 7.
	Test lamp does not light.	Repair open in CKT 194.
7. Replace transmitter batteries with fresh ones if condition of batteries is unknown.	System operates normal.	System is OK.
	System does not operate normal.	Go to Step 8.
8. Jumper Remote Keyless Entry CKT 1455 Program wire to CKT 150.	Doors lock and unlock.	Go to Step 9.
	Doors do not lock and unlock.	Go to Step 10.
9. Leave jumper connected. Obtain known good transmitter. Operate transmitter by pressing a single button once. disconnect Jumper from CKT 1455.	System operates normal.	REPLACE inoperative transmitter. Reprogram Keyless Entry Module to replacement transmitter.
	System does not operate normal.	REPLACE Keyless Entry Module. Reprogram replacement Keyless Entry Module to transmitter.
10. Disconnect program connector jumper. Test lamp CKT 1455 to battery.	Test lamp lights.	Repair short to ground in CKT 1455. Reprogram Keyless Entry Module.
	Test lamp does not light.	REPLACE Keyless Entry Module. Reprogram replacement Keyless Entry Module to transmitter.

ONLY REAR WINDOW RELEASE FUNCTION DOES NOT OPERATE

TEST	RESULT	ACTION
1. Place transmission in PARK. Pres rear window release switch on I/P.	Endgate opens.	Go to Step 2.
	Endgate does not open.	Go to Rear Window Release Section 8A-135.
2. Use a known good transmitter. Disconnect Keyless Entry Module. Test lamp CKT 540 (Utility w/ liftgate) or CKT 640 (Utility w/ cargo doors, Crew Cab, Suburban) to ground.	Test lamp lights.	Go to Step 3.
	Test lamp does not light.	Repair open in CKT 540 or CKT 640 respectively.
3. Test lamp CKT 294 to battery.	Test lamp lights.	Replace Keyless Entry Module. Reprogram module to transmitter.
	Test lamp does not light.	Repair open in CKT 294.

REMOTE KEYLESS ENTRY

TRANSMITTER FUNCTIONS DO NOT OPERATE

TEST	RESULT	ACTION
1. Replace transmitter batteries with fresh ones if condition of batteries is unknown. Does transmitter now operate all remote central functions?	Yes	Return vehicle to customer.
	No	GO to step 2.
2. Jumper Remote Keyless Entry BLK/WHT (1455) Program wire to ground BLK (150) wire at Keyless Entry Programming connector. Do all power doors lock and unlock?	Yes	GO to step 3.
	No	GO to step 4.
3. Leave jumper connected. Obtain known good transmitter. Operate transmitter by pressing a single button once. Disconnect jumper from Program Connector. Does known good transmitter now operate all remote central functions?	Yes	REPLACE inoperative transmitter. Reprogram Keyless Entry Module to replacement transmitter.
	No	REPLACE Keyless Entry Module. Reprogram replacement Keyless Entry Module to transmitter.
4. Disconnect program connector jumper. Check BLK/WHT (1455) wire for short to ground. Is wire shorted to ground?	Yes	REPAIR BLK/WHT (1455) wire and reprogram Keyless Entry Module.
	No	GO to step 5.
5. Measure voltage at Keyless Entry Module connector C1 terminal A ORN (540) wire. Is battery voltage present?	Yes	REPAIR ORN (540) wire and reprogram Keyless Entry Module.
	No	REPLACE Keyless Entry Module. Reprogram replacement Keyless Entry Module to transmitter.

ONLY REAR WINDOW RELEASE FUNCTION DOES NOT OPERATE

TEST	RESULT	ACTION
1. Place transmission in PARK. Press rear window release switch on I/P. Does endgate open?	Yes	GO to step 2.
	No	GO to Rear Window Release System to diagnose system.
2. Connect voltmeter at terminal B of Remote Keyless Entry Module connector C1. Press transmitter to open rear window. Is there battery voltage?	Yes	LOCATE and REPAIR open in BLK (56) wire from module connector C1 to liftgate glass release motor.
	No	REPLACE Keyless Entry Module. Reprogram module to transmitter.

REMOTE KEYLESS ENTRY

CIRCUIT OPERATION

POWER DOOR LOCKS/REMOTE KEYLESS ENTRY

The power door locks/remote keyless entry control system allows the driver to operate the vehicle door locks and rear window release from outside the vehicle using a hand-held radio transmitter. The transmitter operates in the UHF band; it sends coded signals to the Keyless Entry Module. The Keyless Entry Module detects and decodes the signal and issues signals to control the door locks and rear window release. These systems can also be operated in the usual manner; for instance, the door locks will respond to the power door lock switches. For information on the operation of the Rear Window Release System, refer to Page 8A-135-0.

DOOR LOCK OPERATION - SWITCHES

LOCK

When either the LH or RH Front Power Door Lock Switches are pressed to the LOCK position, voltage is supplied from the PWR ACC Circuit Breaker, through the JRN (540) wire, through the Door Lock Switch to terminal F of the Door Lock Relay Assembly. This voltage energizes the Lock Relay Coil, allowing voltage to flow through the relay to the Door Lock Motors, locking all doors. Ground for the LH Front Door Lock Motor is supplied through the Remote Keyless Entry Module. Ground for the other three motors is supplied through the Door Lock Relay Assembly.

UNLOCK

When either of the Front Door Lock Switches is pressed to the UNLOCK position, voltage is supplied from PWR ACC unlocking the doors. Ground for the motors is supplied through the Door Lock Relay.

DOOR LOCK OPERATION - REMOTE KEYLESS ENTRY

LOCK

When the LOCK button is pressed on the transmitter and the Keyless Entry Module receives a signal with a valid Vehicle Access Code (VAC), the lock function sequence is performed. The Keyless Entry Module will lock all doors.

The Keyless Entry Module supplies battery voltage from CONN C2 Terminal D to the coil of the Lock Relay (part of the Door Lock Relay Assembly) through the CKT 195 wire. The Lock Relay is energized, and battery voltage is supplied to the Door Lock Motors. Ground for the LH

Door Lock Motor is provided at the Keyless Entry Module CONN C1 terminal D through internal contacts. Ground for the other door lock motors is provided through the contacts of the UNLOCK Switch, inside the Door Lock Relay Assembly. All door lock motors run to lock all doors. .mh UNLOCK

The unlock function is separated into two operations depending on how the UNLOCK button is pressed on the transmitter. If the UNLOCK button is pressed once, only the LH door is unlocked. If the UNLOCK button is pressed twice within one to five seconds, the other doors will be unlocked.

When the UNLOCK button is pressed once on the transmitter and the Keyless Entry Module receives a valid VAC, the unlock function sequence is performed. The Keyless Entry Module supplies battery voltage to the LH Front Door Lock Motor through the CKT 694 wire. The motor is grounded through the contacts of the Lock Switch inside the Door Lock Relay Assembly. The LH Door Lock Motor runs to unlock the LH Front Door.

If the UNLOCK button on the transmitter is pressed twice to unlock all doors, the Keyless Entry Module activates the door unlock output at CONN C2 terminal E. The Keyless Entry Module supplies battery voltage to the coil of the unlock relay in the Door Lock Relay Assembly. The unlock relay is energized and closes its contacts. Battery voltage is supplied to the RH Front, LH Rear and RH Rear Door Lock Motors. The motors are grounded through contacts of the Lock Switch, inside the Door Lock Relay Assembly. The Motors run to unlock the RH Front, LH Rear and RH Rear doors.

REAR WINDOW RELEASE

When the Rear Window Release button is pressed on the transmitter and the Keyless Entry Module receives a valid VAC, the Keyless Entry Module supplies battery voltage at its CONN C1 terminal B. This battery voltage is then applied to the liftgate glass release motor.

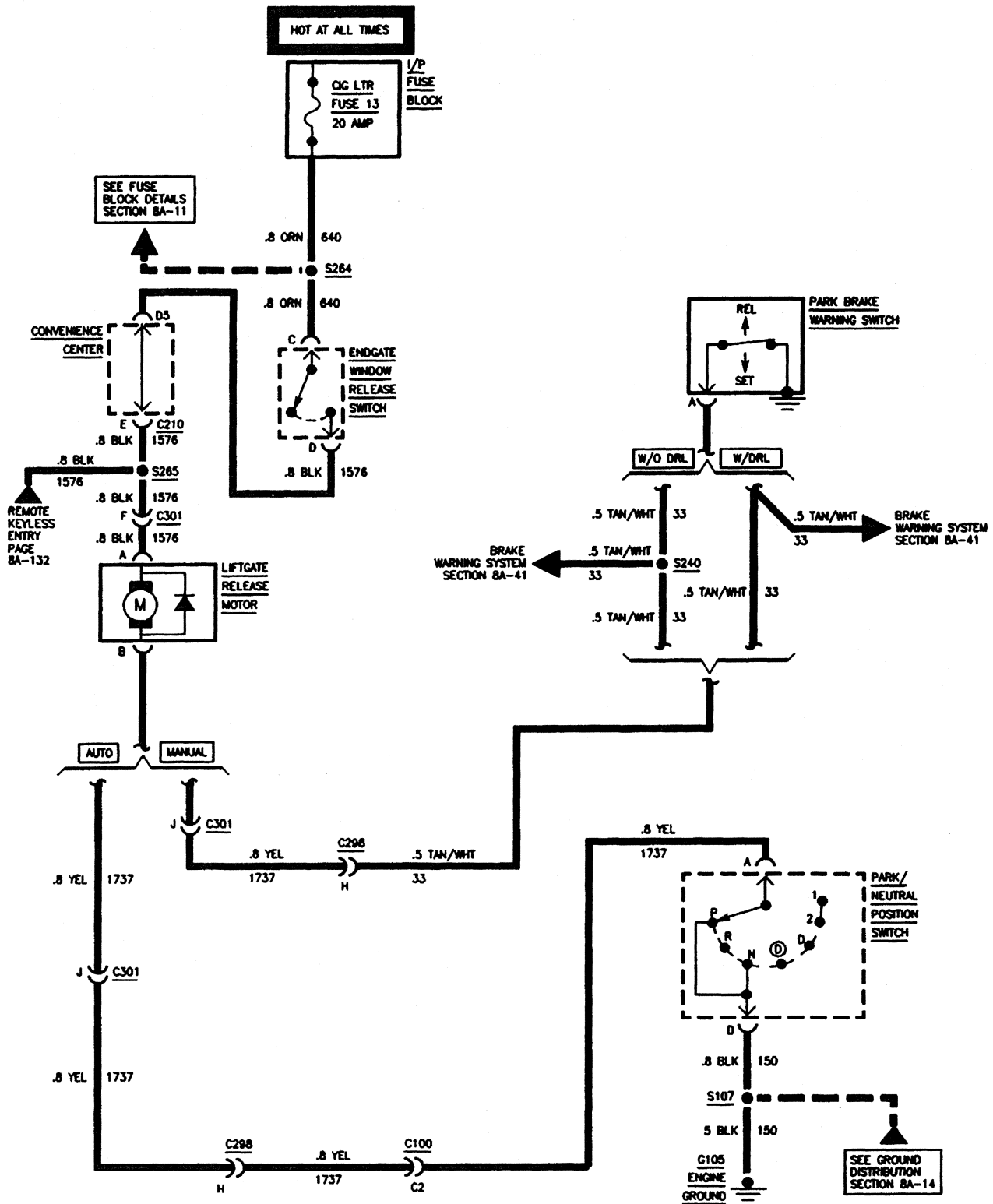
WITH AUTO TRANSMISSION

Ground for the liftgate glass release motor is supplied through the Park/Neutral Position switch only in the PARK or NEUTRAL position. This prevents the window from being opened while the vehicle is being driven.

WITH MANUAL TRANSMISSION

Ground for the liftgate glass release motor is supplied through the park brake switch. This prevents the window from being opened while the vehicle is being driven.

REAR LIFTGATE WINDOW RELEASE



REAR LIFTGATE WINDOW RELEASE

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead	34	41	
Fuse Block - I/P Harness	Lower LH side of I/P	26	31	
Park Brake Warning Switch	At park brake, under LH end of I/P			
Park/Neutral Position Switch	LH side center of transmission	18	21	
Rear Window Release Solenoid	Inside endgate	48	57	
Rear Window Release Switch...	LH side of I/P			
CONNECTORS:				
C100	LH rear of engine compartment at bulkhead	7	10	
C298	Behind LH side of I/P, near convenience center	27	32	
C301	LH front kick panel	34	41	
GROUND:				
G105 (VIN P)	RH top rear of cylinder head	15	18	
G105 (VIN Z, H, K)	RH front wheelhouse	1	4	
SPLICES:				
S107 (VIN F)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN P)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN S)	Engine harness, 5 cm from transmission harness breakout			
S107 (VIN Z, H, K, N)	Engine harness, approx. 5 cm from generator breakout			
S240 (Crew Cab, VIN F)	I/P harness, approx. 4 cm left of turn signal flasher breakout			
S240 (Diesel)	I/P harness, approx. 11 cm left of breakout crossbody harness connector C298			
S240 (w/DRL)	I/P harness, approx. 4 cm left of turn signal flasher breakout			
S240 (w/o DRL)	I/P harness, approx. 11 cm from cruise control harness breakout			
S264	I/P harness, approx. 16 cm right of I/P cluster connector			
S265 (Suburban)	Crossbody harness, 6 cm left of LH door breakout			
S265 (Utility)	Crossbody harness, 26 cm right of I/P harness breakout			

REAR LIFTGATE WINDOW RELEASE**DIAGNOSIS - REAR LIFTGATE WINDOW RELEASE****TROUBLESHOOTING HINTS:**

1. Check to see that CIG LTR Fuse is not open. If fuse is open, locate and repair source of overload, then replace fuse.
2. Check for mechanical binding of linkage.

REAR WINDOW RELEASE DOES NOT OPERATE

TEST	RESULT	ACTION
1. With transmission in Park or Neutral (automatic) or Park Brake set (manual), press and hold Rear Liftgate Release Switch. Test lamp Term "D" to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Check/Repair open in CKT 640. If OK, replace Rear Liftgate Release Switch.
2. Disconnect Liftgate Release Motor. Test lamp Term "B" to battery. Press and hold switch.	Test lamp lights.	Check/Repair open in CKT 1576. If OK, replace Liftgate Release Motor.
	Test lamp does not light.	Go to Step 3.
3. Disconnect Park/Neutral Position Switch (automatic) or Park Brake Warning Switch (manual). Press and hold switch. Test lamp Park/Neutral Position Switch Term "A" to ground or Park Brake Warning Switch Term "A" to ground.	Test lamp lights.	Check/Repair CKT 150. If OK, replace Park/Neutral Position Switch (automatic). Replace Park Brake Warning Switch (manual).
	Test lamp does not light.	Repair open in CKT 1737 (automatic). Repair open in CKT 1737 or CKT 33 (manual).

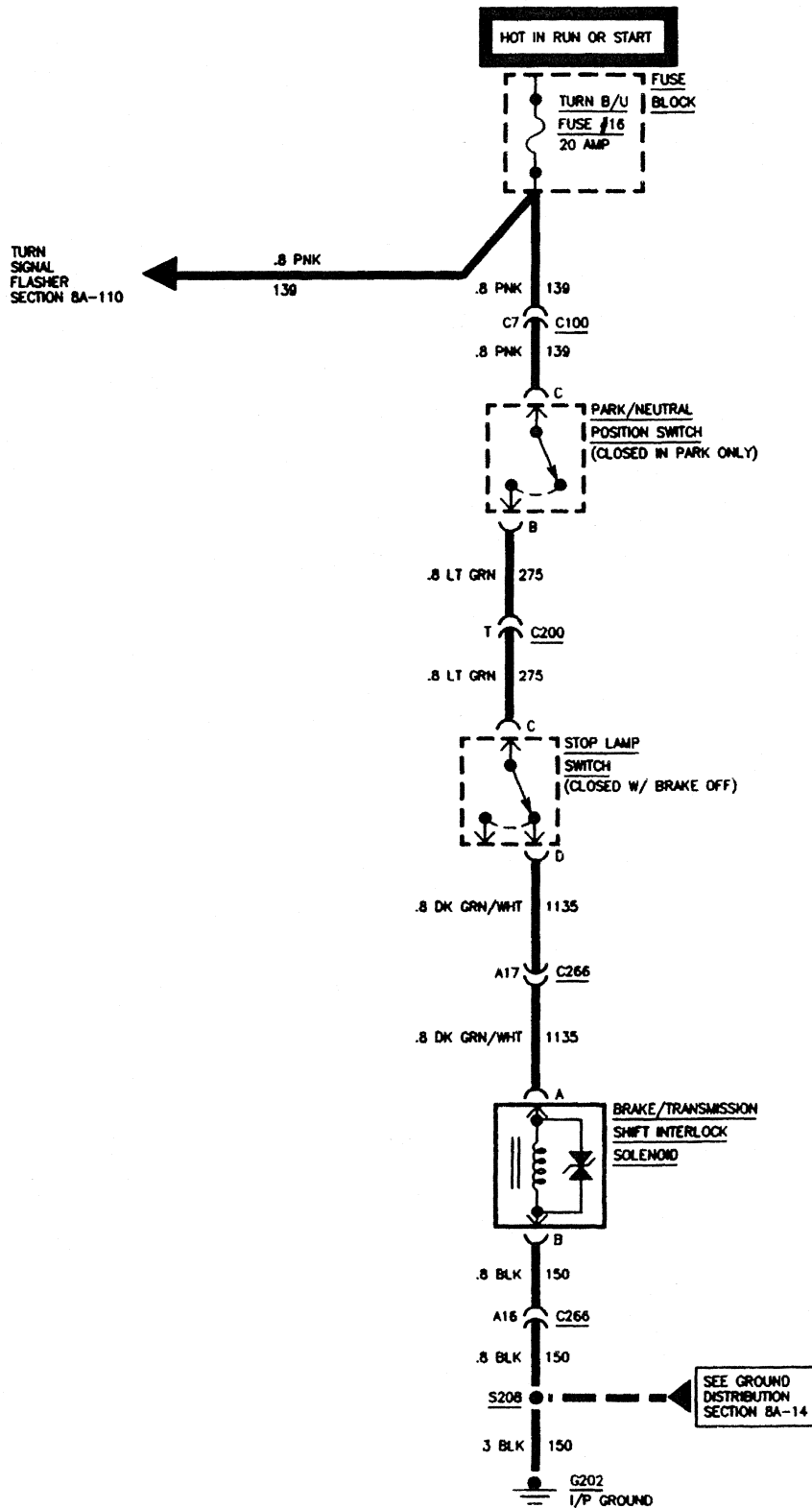
CIRCUIT OPERATION

Voltage to the Rear Window Release system is available at all times through the CIG LTR Fuse and CKT 640. Ground for the Rear Window Release Motor is provided through CKT 1737 (auto) or CKT 33 (manual), the Park Brake Warning Switch on manual transmissions, and the Park/Neutral Position Switch on automatic transmissions.

These switches are closed to ground with the Parking Brake set or the transmission in PARK or NEUTRAL. Closing the Rear Liftgate Window Release Switch allows current to flow through the switch and CKT 1576 to the Rear Liftgate Window Release Motor.

BLANK

BRAKE TRANSMISSION SHIFT INTERLOCK (BTSI)



BRAKE TRANSMISSION SHIFT INTERLOCK (BTSI)

COMPONENT	LOCATION	201-PG	FIG.	CONN
Brake Transmission Shift:				
Interlock (BTSI) Solenoid.....	RH side of steering column, under support bracket			
Data Link Connector (DLC)	Under LH side of I/P.....	30		36
I/P Fuse Block.....	Lower LH side of I/P			
Park/Neutral Position Switch.....	LH side center of transmission	18		21
CONNECTORS:				
C100.....	LH rear of engine compartment at bulkhead.....	7		10
C200.....	Behind RH portion of I/P, near heater motor, in foam wrap..	28		33
C266.....	LH side of steering column, near bulkhead.....	26		31
GROUND:				
G200.....	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			

DIAGNOSIS - BRAKE TRANSMISSION SHIFT INTERLOCK (BTSI)

TROUBLESHOOTING HINTS:

1. The shift lever should lock in "Park" with the key in the "RUN" position and the brake pedal in the rest position. If the shift lever can be moved from the "Park" position, with the key in the "RUN" position and without depressing the brake pedal, check turn signal operation. If the turn signals do not operate correctly, check fuse #16 (Turn/Back-up) to see if it is blown (the turn signal flasher is on the same circuit as BTSI). If the fuse is open, find and repair source of overload, then replace fuse. If the fuse is good (turn signals operate correctly), continue with diagnostics.
2. With the key in the "OFF" position, the shift lever should be able to be moved from the "Park" position without applying the brake. If not, the problem may be with the BTSI solenoid, or the shift linkage itself.

If the shift linkage is binding, refer to Sections 7A14D, page 4 (4L60E Transmission), or 7A17D, page 4 (4L80E Transmission), in the 1995 C/K Truck Service Manual. If the shift linkage does not appear to be binding, continue with BTSI Diagnostics.

3. If the Park/Neutral Position (PNP) switch needs adjustment or replacement, refer to Sections 7A14D, page 5 (4L60E Transmission), or 7A17D, page 5 (4L80E Transmission), in the 1995 C/K Truck Service Manual.
4. To Remove, Disconnect, or Adjust the BTSI solenoid assembly, refer to Section 3F4, page 12, of 1995 C/K Truck Service Manual.

BRAKE TRANSMISSION SHIFT INTERLOCK (BTSI)

TRANSMISSION SELECTOR LEVER IS LOCKED IN PARK WITH KEY ON AND BRAKE PEDAL DEPRESSED

TEST	RESULT	ACTION
1. With key in RUN position, shift lever in Park, disconnect BTSI solenoid connector.	Shift linkage unlocks.	GO to step 2.
	Shift linkage stays locked.	GO to step 3.
2. Check continuity through BTSI portion of stop lamp switch (pins C & D) with brake pedal depressed.	Continuity	REPLACE stop lamp switch.
	No continuity	LOCATE and REPAIR short to B+ in DK GRN/WHT (1135) wire between stop lamp switch and BTSI solenoid.
3. Remove BTSI solenoid assembly. Refer to Section 3F4, page 12, of the 1995 C/K Truck Service Manual.	Shift linkage unlocks.	REPLACE BTSI solenoid.
	Shift linkage stays locked.	Shift linkage is binding. Refer to Sections 7A14D, page 4 (4L60E Transmission), or 7A17D, page 4 (4L80E Transmission), in the 1995 C/K Truck Service Manual.

TRANSMISSION IS LOCKED IN PARK WITH KEY IN OFF POSITION

TEST	RESULT	ACTION
1. Connect test lamp from DK GRN/WHT (1135) wire to ground at the BTSI solenoid connector.	Test lamp lights.	GO to step 2.
	Test lamp doesn't light.	GO to step 3.
2. Leave test lamp hooked up as in Step 1. Pull Fuse # 16 (Turn B/U) in I/P Fuse Block.	Test lamp lights.	GO to step 4.
	Test lamp doesn't light.	GO to step 5.
3. Remove BTSI solenoid assembly. Refer to the Section 3F4, page 12, of the 1995 C/K Truck Service Manual.	Shift linkage unlocks.	REPLACE BTSI solenoid.
	Shift linkage stays locked.	Shift linkage is binding. Refer to Section 7A14D, page 4 (4L60E Trans) or 7A17D, page 4 (4L80E Trans), of 1995 C/K Truck Service Manual.
4. Disconnect Park/Neutral Position (PNP) switch connector. Connect test lamp from PNK (139) wire to ground at PNP switch connector.	Test lamp lights.	LOCATE and REPAIR short to B+ in PNK (139) wire between Fuse Block and PNP switch.
	Test lamp doesn't light.	LOCATE and REPAIR short to B+ in LT GRN (275) wire.
5. Disconnect connector C266. Check continuity between pins C5 and D5 of the Ignition Switch side of connector C266 with the key in the OFF position. Refer to section 8A-10, page 1, of 1995 C/K Truck Driveability,Emissions, and Electrical Diagnosis Manual.	Continuity	REPLACE Ignition Switch. Refer to Section 3F4, page 8, of 1995 C/K Truck Service Manual.
	No Continuity	LOCATE and REPAIR short to B+ in PNK (139) wire between Fuse Block and C266.

BRAKE TRANSMISSION SHIFT INTERLOCK (BTSI)**SHIFT LEVER WILL NOT LOCK IN PARK POSITION**

TEST	RESULT	ACTION
1. Check Fuse # 16 (Turn-B/U) to see if it is OPEN.	Fuse # 16 is OPEN.	LOCATE and REPAIR source of overload. REPLACE Fuse.
	Fuse # 16 is OK.	GO to step 2.
2. With key in the RUN position and shift lever in PARK, check for B+ voltage at Fuse # 16.	No voltage	GO to step 3.
	B+ voltage	GO to step 4.
3. Disconnect connector C266. Check for continuity between pins C5 and D5 of the Ignition switch side of C266 with key in RUN position.	If continuity.	LOCATE and REPAIR open in PNK (3) wire between C266 and Fuse Block.
	If no continuity.	REPLACE Ignition Switch. Refer to Section 3F4, page 8, of 1995 C/K Truck Service Manual.
4. With key in the RUN position and shift lever in PARK, connect test lamp from LT GRN (275) to ground, at Park/Neutral Position (PNP) switch connector.	Test lamp lights.	GO to step 5.
	Test lamp does not light.	GO to step 6.
5. Connect test lamp from LT GRN (275) to ground, at stop lamp switch connector.	Test lamp lights.	GO to step 7.
	Test lamp does not light.	LOCATE and REPAIR open in LT GRN (275) wire between PNP switch and stop lamp switch.
6. Connect test lamp from PNK (139) wire to ground at PNP switch connector.	Test lamp lights.	Adjust PNP switch and repeat step 4 until test lamp lights. Refer to Section 7A14D, page 5 (4L60E Trans) or 7A17D, page 5 (4L80E Trans), in the 1995 C/K Truck Service Manual. If adjustment doesn't help, REPLACE PNP switch.
	Test lamp does not light.	LOCATE and REPAIR open in PNK (139) wire between fuse block and PNP switch.
7. Connect test lamp from DK GRN/WHT (1135) wire to ground at stop lamp switch connector.	Test lamp lights.	GO to step 8.
	Test lamp does not light.	REPLACE stop lamp switch assembly.
8. Connect test lamp from DK GRN/WHT (1135) wire to ground at BTSI solenoid connector.	Test lamp lights.	GO to step 9.
	Test lamp does not light.	LOCATE and REPAIR open in DK GRN/WHT (1135) wire between stop lamp switch and BTSI solenoid connectors.
9. Connect test lamp from DK GRN/WHT (1135) wire to BLK (150) wire at BTSI solenoid connector.	Test lamp lights.	REPLACE BTSI solenoid assembly. Refer to Section 3F4, page 12, of the 1995 C/K Truck Service Manual.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between BTSI connector and G202.

BRAKE TRANSMISSION SHIFT INTERLOCK (BTSI)

CIRCUIT OPERATION

When the Brake Transmission Shift Interlock (BTSI) is energized, the solenoid locks the shift lever mechanism in "Park". When not energized, the BTSI solenoid returns to the unlocked position.

The components involved in the BTSI circuit are as follows:

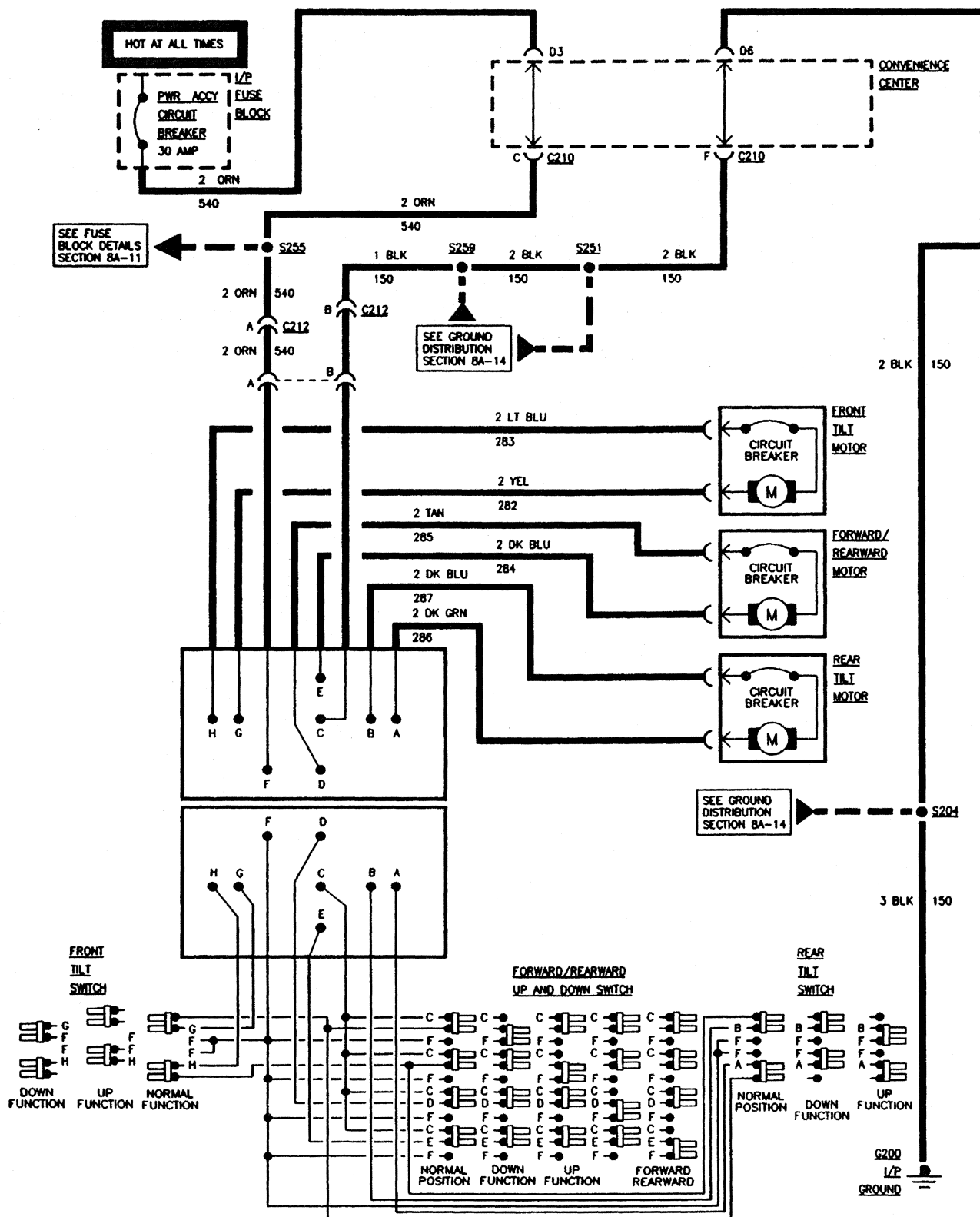
- Park/Neutral Position Switch
- Stop Lamp Switch
- BTSI Solenoid

Fuse #16 (Turn/Back-Up) supplies B+ (12V), after the ignition switch, to the BTSI solenoid via the Park/Neutral Position (PNP) switch and the Stop Lamp Switch. With the key in the "RUN" or "START" position, the shifter in "Park", and the brake pedal released, the solenoid is energized. This locks the shift lever in "Park".

Note that the BTSI portion of the Stop Lamp Switch (pins C & D) is CLOSED with the brakes released. Depressing the brake pedal OPENS the switch causing the solenoid to de-energize, unlocking the shift lever. The BTSI portion of the PNP switch (pins B & C) is closed in "Park" only. The circuit is not active with the key "OFF" to facilitate towing.

BLANK

POWER DRIVER'S SEAT



POWER DRIVER'S SEAT

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead	34		41
I/P Fuse Block	Lower LH side of I/P			
CONNECTORS:				
C210	At convenience center	27		32
C212	Under driver's seat			
GROUND:				
G200	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S255 (Suburban/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 12 cm right of I/P harness breakout			
S259 (Suburban)	Crossbody harness, 17 cm right of door lock relay breakout			
S259 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 25 cm into LH seat breakout			

DIAGNOSIS - POWER DRIVER'S SEAT**TROUBLESHOOTING HINTS:**

1. Check to see that the PWR ACCY Circuit Breaker is resetting. Replace if necessary.
2. Check that G200 is clean and tight.
3. Check that there are not any obstructions under the seat or in the carriages which may affect Power Seat Operation.
4. Refer to SECTION 10A2 for diagnosis and repair of all non-electrical system components.
 - Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction "GOOD" in a continuity /voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).

- Check for proper installation of a aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," SECTION 8A-4).

POWER DRIVER'S SEAT

POWER SEAT DOES NOT OPERATE IN ANY DIRECTION

TEST	RESULT	ACTION
1. Remove Power Seat Switch Assembly from its connector. Connect test lamp from ORN (540) wire at Power Seat switch Connector to ground.	Test lamp lights.	GO TO step 2.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (540) wire between Seat Switch Connector and I/P Fuse Block.
2. Connect test lamp from BLK (150) wire to ORN (540) wire at Seat Switch Connector.	Test lamp lights.	REPLACE Power Seat Switch Assembly.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between Seat Switch Assembly and G200.

POWER SEAT FRONT TILT MOTOR IS INOPERATIVE

TEST	RESULT	ACTION
1. Using a fused jumper lead, connect YEL (282) wire to BLK (150) wire cavity at Seat Switch Assembly Connector. Connect a fused jumper momentarily from LT BLU (283) wire to ORN (540) wire cavity at Seat Switch Assembly Connector.	Motor moves.	REPLACE Seat Switch Assembly.
	Motor does not move.	GO TO step 2.
2. Connect LT BLU (283) wire to BLK (150) wire at Power Seat Switch Assembly Connector with a fused jumper lead. Momentarily connect YEL (282) wire cavity to ORN (540) wire cavity with a fused jumper lead at Seat Switch Assembly Connector.	Motor moves.	REPLACE Seat Switch Assembly.
	Motor does not move.	GO TO step 3.
3. Using a digital multimeter, check for continuity in the YEL (282) wire and the LT BLU (283) wire between the Seat Switch Assembly and the Front Tilt Motor.	Continuity.	REPLACE Front Tilt Motor.
	No continuity.	LOCATE and REPAIR open YEL (282) wire and/or LT BLU (283) wire between front Tilt Motor and Power Seat Switch Assembly.

POWER DRIVER'S SEAT**POWER SEAT REAR TILT MOTOR IS INOPERATIVE**

TEST	RESULT	ACTION
1. Connect DK GRN (286) wire to BLK (150) wire at Seat Switch Assembly Connector with a fused jumper lead. Momentarily connect DK BLU (287) wire cavity to ORN (540) wire cavity with a fused jumper lead at Seat Switch Assembly Connector.	Motor moves.	REPLACE Power Seat Switch Assembly.
	Motor does not move.	GO TO step 2.
2. Connect DK BLU (287) wire to BLK (150) wire at Seat Switch Assembly Connector with a fused jumper lead. Momentarily connect DK GRN (286) wire cavity to ORN (540) wire cavity with a fused jumper lead at Seat Switch Assembly Connector.	Motor moves.	REPLACE Power Seat Switch Assembly.
	Motor does not move.	GO TO step 3.
3. Using a digital multimeter, check for continuity in the DK BLU (287) wire and the DK GRN (286) wire between the Seat Switch Assembly and the Rear Tilt Motor.	Continuity.	REPLACE rear Tilt motor.
	No continuity.	LOCATE and REPAIR open in DK GRN (286) wire and/or DK BLU (287) wire from Rear Tilt Motor Connector to Seat Switch Assembly Connector.

POWER SEAT DOES NOT MOVE FORWARD/REARWARD

TEST	RESULT	ACTION
1. Connect DK BLU (284) wire to BLK (150) wire at Seat switch Assembly Connector with a fused jumper lead. Momentarily connect TAN (285) wire cavity to ORN (540) wire cavity with a fused jumper lead at Seat Switch Assembly Connector.	Motor moves.	REPLACE Power Seat Switch Assembly.
	Motor does not move.	GO to step 2.
2. Connect TAN (285) wire to BLK (150) wire cavity at Seat Switch Assembly Connector with a fused jumper lead. Momentarily connect DK BLU (284) wire cavity to ORN (540) wire cavity with a fused jumper lead at Seat Switch Assembly Connector.	Motor moves.	REPLACE Seat Switch Assembly.
	Motor does not move.	GO to step 3.
3. Using a digital multimeter, check for continuity in the TAN (285) wire and the DK BLU (284) wire between Seat Switch Assembly and Forward/Rear Motor.	Continuity.	REPLACE Forward/Rearward Motor.
	No continuity.	LOCATE and REPAIR open in TAN (285) wire and/or DK BLU (284) wire from forward/rearward motor Connector to Seat switch Assembly Connector.

POWER DRIVER'S SEAT

CIRCUIT OPERATION

Three reversible motors operate the power seat. One motor raises or lowers the front of the seat. One motor raises or lowers the rear of the seat. The third motor moves the seat forward or back.

Moving the Front Tilt Switch UP supplies voltage to the Front Tilt Motor through the YEL wire (282). The motor is grounded through the Front Tilt Switch to G200 and the front of the seat is raised. Moving the Front Tilt Switch to the DOWN position reverses the polarity and the front of the seat is lowered.

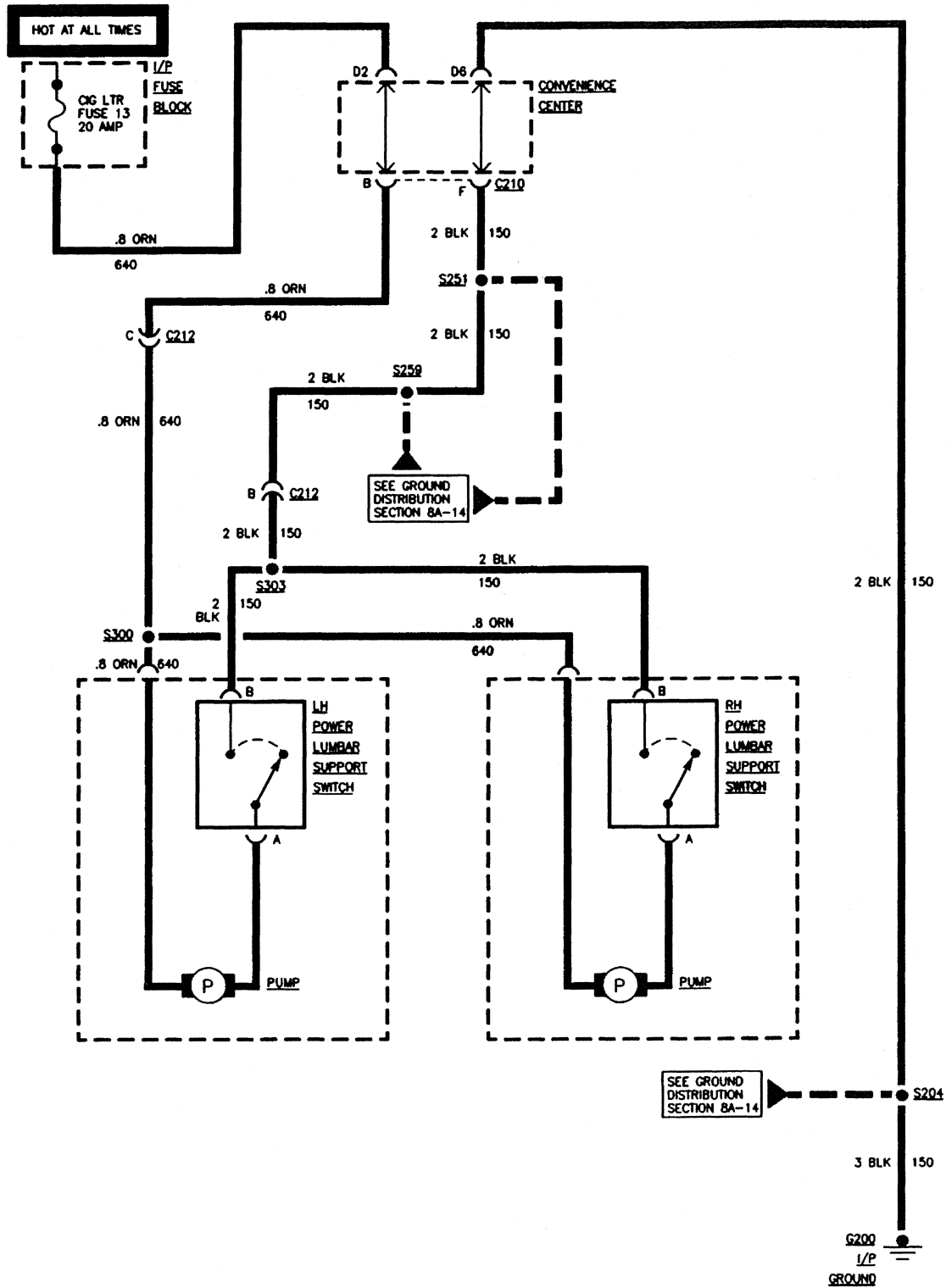
The Rear Tilt Motor is operated in the same manner through the Rear Tilt Switch.

Moving the Forward/Rearward, UP and DOWN Switch up or down operates the Front Tilt Motor and Rear Tilt Motor at the same time.

Moving the Forward/Rearward, UP and DOWN Switch forward or backwards operates the Fore/Aft motors and the seat moves forward or backward.

BLANK

LUMBAR SUPPORTS BUCKET AND SPLIT BENCH SEAT



LUMBAR SUPPORTS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P Harness	Under LH side of I/P, on bulkhead	34	41	
I/P Fuse Block	Lower LH side of I/P			
CONNECTORS:				
C210	At convenience center	27	32	
C212	Under driver's seat			
GROUNDING:				
G200	Behind LH side of I/P, below fuse block			
SPLICES:				
S251 (Suburban) (base only)	Crossbody harness, 8 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 6 cm left of LH seat breakout			
S259 (Suburban)	Crossbody harness, 17 cm right of door lock relay breakout			
S259 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 25 cm into LH seat breakout			
S300	Inside power lumbar seat jumper			
S303	Inside power lumbar seat jumper			

TROUBLESHOOTING HINTS:

1. Check condition of CIG LTR fuse. If fuse is open locate and repair source of overload. Replace Fuse.
2. If both driver and passenger lumbar supports are inoperative, check circuit 640 between splice S300 and fuse block and/or ground circuit 150 between splice S303 and G200.
3. If one seat lumbar support is inoperative, check for:
 - pinched or punctured bladder tubing
 - punctured bladder
 - evidence of motor overheating, pinched or broken wires
 - replace or repair as necessary

LUMBAR SUPPORTS

LUMBAR SUPPORTS - POWER LUMBAR INOPERATIVE

TEST	RESULT	ACTION
1. Disconnect power lumbar connector C212. Connect test lamp from power lumbar harness connector terminal "B" to B+.	Test lamp lights.	Go to step 2.
	Test lamp does not light.	Repair open in BLK (150).
2. Connect test lamp from power lumbar harness connector C212 terminal "C" to ground.	Test lamp lights.	Go to step 3.
	Test lamp does not light.	Repair open in ORN (640).
3. Disconnect power lumbar support switch. Connect a jumper wire from one end of pump motor to ground. connect a jumper wire to other end of pump motor. Momentarily connect jumper to B+.	Motor runs.	Go to step 4.
	Motor does not run.	Replace power lumbar pump motor.
4. Connect test lamp from switch connector terminal "A" to ground.	Test lamp lights.	Go to step 5.
	Test lamp does not light.	Repair open in ORN(640) wire between switch connector and connector C212 terminal "C."
5. Connect test lamp from switch connector terminal "B" to B+.	Test lamp lights.	Replace lumbar support switch.
	Test lamp does not light.	Repair open in BLK(150) wire between switch connector and C212 terminal.

CIRCUIT OPERATION

With bucket and split bench seat combinations, each seat incorporates a power inflate/deflate pneumatic system for changing the contour of the seat. Ground is supplied at all times to both power lumbar support switches. When the power lumbar support switch is closed, voltage is applied and current flows in the corresponding direction through the pump motor.

With a bench seat, one pump and pneumatic system is used to supply the RH and LH seat lumbar supports. Individual control switches are incorporated into the left and right side of the seat to change the seat contour.



POWER MIRRORS

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead	34	41	
Fuse Block - I/P Harness	Lower LH side of I/P	26	31	
Power Outside Rearview Mirror				
Switch	On LH door trim panel			
Power Outside Rearview Mirror, LH	On outside of LH front door			
Power Outside Rearview Mirror, RH	On outside of RH front door			
CONNECTORS:				
C207	Inside LH "A" pillar, lower portion	43	52	
C214	Inside RH "A" pillar, lower portion	43	53	
C298	Behind LH side of I/P, near convenience center	27	32	
GROUND:				
G200	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S207	I/P harness, approx. 8 cm right of steering column connector breakout			
S242 (Diesel)	I/P harness, approx. 8 cm right of headlamp dimmer switch breakout			
S248	Crossbody harness, 6 cm into LH door breakout			
S251 (Suburban) (base only)	Crossbody harness, 8 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 6 cm left of LH seat breakout			
S602	Inside RH front door harness			

POWER MIRRORS**DIAGNOSIS - POWER MIRRORS****TROUBLESHOOTING HINTS:**

1. Check to see that the CTSY Fuse is not open.
2. Refer to Section 10A1 of the 1995 C/K Service Manual for diagnosis and repair of all non-electrical system components.

LH MIRROR WILL NOT ADJUST UP AND DOWN

TEST	RESULT	ACTION
1. Disconnect LH Outside Power Mirror. Press switch in "UP" position. Test lamp CKT 981 to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Check/Repair open in CKT 981. If OK, replace Power Outside Mirror Switch.
2. Press switch in "DOWN" position. Test lamp CKT 89 to ground.	Test lamp lights.	Replace LH Outside Power Mirror.
	Test lamp does not light.	Check/Repair open in CKT 89. If OK, replace Power Outside Mirror Switch.

RH MIRROR WILL NOT ADJUST UP AND DOWN

TEST	RESULT	ACTION
1. Disconnect RH Outside Power Mirror. Press switch in "UP" position. Test lamp CKT 981 to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Check/Repair open in CKT 981. If OK, replace Power Outside Mirror Switch.
2. Press switch in "DOWN" position. Test lamp CKT 889 to ground.	Test lamp lights.	Replace RH Outside Power Mirror.
	Test lamp does not light.	Check/Repair open in CKT 889. If OK, replace Power Outside Mirror Switch.

LH MIRROR WILL NOT ADJUST LEFT AND RIGHT

TEST	RESULT	ACTION
1. Disconnect LH Outside Power Mirror. Press switch in "LEFT" position. Test lamp CKT 981 to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Check/Repair open in CKT 981. If OK, replace Power Outside Mirror Switch.
2. Press switch in "RIGHT" position. Test lamp CKT 82 to ground.	Test lamp lights.	Replace LH Outside Power Mirror.
	Test lamp does not light.	Check/Repair open in CKT 82. If OK, replace Power Outside Mirror Switch.

RH MIRROR WILL NOT ADJUST LEFT AND RIGHT

TEST	RESULT	ACTION
1. Disconnect RH Outside Power Mirror. Press switch in "RIGHT" position. Test lamp CKT 981 to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Check/Repair open in CKT 981. If OK, replace Power Outside Mirror Switch.
2. Press switch in "LEFT" position. Test lamp CKT 90 to ground.	Test lamp lights.	Replace RH Outside Power Mirror.
	Test lamp does not light.	Check/Repair open in CKT 82. If OK, replace Power Outside Mirror Switch.

POWER MIRRORS**RH MIRROR WILL NOT ADJUST LEFT AND RIGHT**

TEST	RESULT	ACTION
1. Disconnect RH Outside Power Mirror. Press switch in "RIGHT" position. Test lamp CKT 981 to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Check/Repair open in CKT 981. If OK, replace Power Outside Mirror Switch.
2. Press switch in "LEFT" position. Test lamp CKT 90 to ground.	Test lamp lights.	Replace RH Outside Power Mirror.
	Test lamp does not light.	Check/Repair open in CKT 981. If OK, replace Power Outside Mirror Switch.

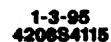
NEITHER MIRROR IS OPERATIONAL

TEST	RESULT	ACTION
1. Disconnect Power Outside Mirror Switch. Test lamp CKT 40 to ground.	Test lamp lights.	Go to Step 2.
	Test lamp does not light.	Repair open in CKT 40.
2. Test lamp CKT 40 to CKT 150.	Test lamp lights.	Check/Repair open in CKT 981. If OK, replace Power Mirror Switch.
	Test lamp does not light.	Repair open in CKT 150.

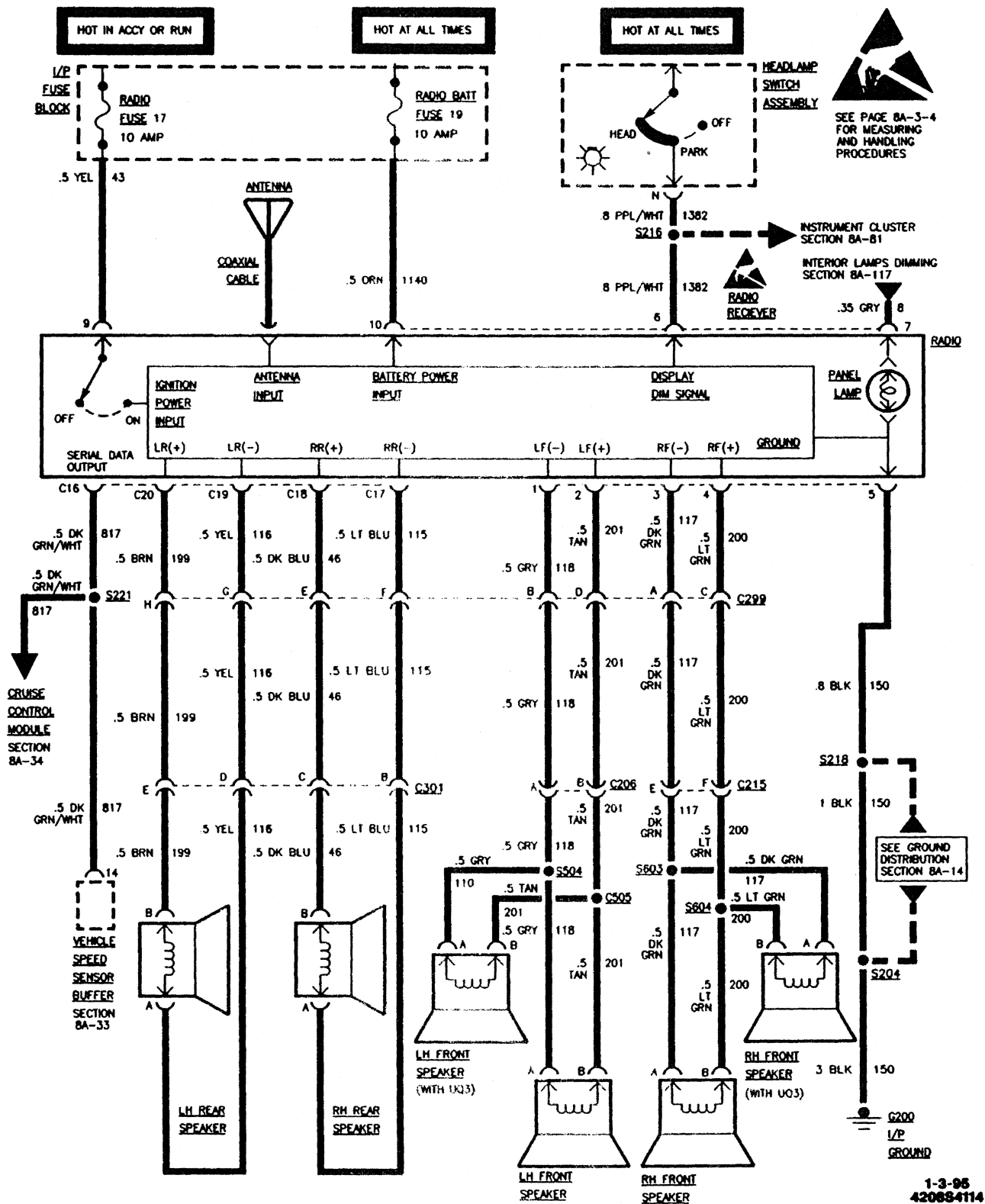
CIRCUIT OPERATION**POWER MIRRORS**

Voltage is supplied at all times to the Power Outside Mirror Switch through the CTSY Fuse.

The mirror assemblies contain two motors. One motor positions the mirror up and down, the other motor positions the mirror to the left or right. By reversing the polarity of the motors, the motors will move the mirrors either up/down or left/right.



RADIO AND POWER AMPLIFIER



RADIO AND POWER AMPLIFIER

COMPONENT	LOCATION	201-PG	FIG.	CONN
Convenience Center - I/P				
Harness	Under LH side of I/P, on bulkhead	34	41	
Headlamp (Off/On) and Panel				
Dimmer Switch	Upper LH side of I/P	26	31	
I/P Fuse Block	Lower LH side of I/P			
Power Amplifier	Under driver's seat			
Power Amplifier Relay	Under I/P, RH side of brake pedal bracket			
Speaker, LH Front Door	Lower front side of door panel			
Speaker, LH Rear	Upper rear sides of body			
Speaker, LH Rear Side Door	LH Rear Side Door			
Speaker, RH Rear Side Door	RH Rear Side Door			
Vehicle Speed Sensor Buffer	Under RH end of I/P	30	35	
CONNECTORS:				
C206	Inside LH "A" pillar, lower portion	43	52	
C210	At convenience center	27	32	
C215	Inside RH "A" pillar, lower portion	43	53	
C299	Behind RH side of I/P, above HVAC evaporator housing	31	37	
C301	LH front kick panel	34	41	
C496	RH "B" Pillar	46	55	
C498	LH "B" Pillar	46	55	
GROUND:				
G200	Behind LH side of I/P, below fuse block			
SPLICES:				
S204	I/P harness, approx. 4 cm left of steering column connector breakout			
S216	I/P harness, approx. 12 cm right of I/P cluster connector			
S218	I/P harness, approx. 4 cm right of turn signal flasher			
S221	I/P harness, approx. 16 cm right of turn signal flasher breakout			
S249 (Suburban)	Crossbody harness, 13 cm into LH door breakout			
S250 (Suburban)	Crossbody harness, 4 cm right of LH door breakout			
S251 (Suburban) (base only)	Crossbody harness, 8 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab -base)	Crossbody harness, 12 cm right of LH door breakout			
S251 (Utility/Crew Cab/Pickup/Extended Cab)	Crossbody harness, 6 cm left of LH seat breakout			
S252 (Suburban)	Crossbody harness, 6 cm right of I/P harness breakout			
S254 (Suburban)	Crossbody harness, 6 cm right of I/P harness breakout			

RADIO AND POWER AMPLIFIER

COMPONENT	LOCATION	201-PG FIG. CONN
S256	Crossbody harness, 21 cm right of I/P harness breakout	
S259 (Suburban).....	Crossbody harness, 17 cm right of door lock relay breakout	
S259 (Utility/Crew Cab/Pickup/Extended Cab).....	Crossbody harness, 25 cm into LH seat breakout	
S264	I/P harness, approx. 16 cm right of I/P cluster connector	
S504	Inside LH front door harness	
S505	Inside LH front door harness	
S603	Inside RH front door harness	
S604	Inside RH front door harness	

RADIO AND POWER AMPLIFIER**DIAGNOSIS - RADIO AND POWER AMPLIFIER****TROUBLESHOOTING HINTS:**

1. Check condition of RADIO #17, RADIO #19, PNL LPS Fuse(s). If fuse(s) is open, locate and repair source of overload. Replace fuse(s).

2. Observe instrument panel lamps. If inoperative, REPAIR before proceeding with radio lamp diagnosis.

RADIO DOES NOT RETAIN STATIONS IN MEMORY OR CLOCK DOES NOT OPERATE

TEST	RESULT	ACTION
1. Disconnect radio connector. Connect test lamp from ORN (1140) wire at radio connector to ground.	Test lamp lights.	REMOVE radio and send in for repair.
	Test lamp does not light.	LOCATE and REPAIR open in ORN (1140) wire between radio connector and fuse block.

RADIO ILLUMINATION LAMPS DO NOT COME ON

TEST	RESULT	ACTION
1. Disconnect radio connector. Place headlamp switch to PARK and panel dimmer switch to HI (full intensity). Connect test lamp from GRA (8) wire to ground .	Test lamp lights.	REMOVE radio and send in for repair.
	Test lamp does not light.	LOCATE and REPAIR open in GRA (8) wire between radio connector and fuse block.

DISPLAY DIMMING FUNCTION WILL NOT OPERATE

TEST	RESULT	ACTION
1. Disconnect radio connector. Place headlamp switch in PARK. Connect test lamp from PPL/WHT (1382) wire at radio connector to ground.	Test lamp lights.	REMOVE radio and send in for repair.
	Test lamp does not light.	LOCATE and REPAIR open in PPL/WHT (1382) wire between radio connector and fuse block.

DISPLAY IS INOPERATIVE, NO SOUND FROM ANY SPEAKER

TEST	RESULT	ACTION
1. Disconnect radio connector. Place light switch in RUN. With a DVM, measure voltage at radio connector between terminal "10" and ground.	Voltage is approx. equal to battery voltage.	GO to step 2.
	Voltage is not approx. equal to battery voltage.	LOCATE and REPAIR poor connection or open in ORN (1140) wire between radio connector and I/P fuse block.
2. With a DVM, measure voltage at radio connector between terminal "10" and terminal "5."	Voltage is approx. equal to battery voltage.	GO to step 3.
	Voltage is not approx. equal to battery voltage.	Repair poor connection or open in BLK (150) wire between radio connector terminal "5" and G200.
3. With a DVM, measure voltage at radio connector between terminal "9" and terminal "5."	Voltage is approx. equal to battery voltage.	Check radio connector for terminals shorted together, check for poor connections. If OK, service radio.
	Voltage is not approx. equal to battery voltage.	Repair poor connection or open in YEL CKT 43 between radio connector terminal "9" and I/P fuse block.

RADIO AND POWER AMPLIFIER**NO SOUND FROM ONE SPEAKER**

TEST	RESULT	ACTION
1. Ignition switch "OFF." Disconnect speaker connector. With a DVM, measure resistance of speaker.	Resistance is between 4 ohms and 15 ohms.	GO to step 2.
	Resistance is NOT between 4 ohms and 15 ohms.	REPLACE speaker.
2. Disconnect radio connectors. With a DVM, measure the resistance at the speaker connector from terminal "A" and ground.	Resistance is infinite.	GO to step 3.
	Resistance is infinite.	Repair short to ground in speaker feed circuit.
3. With a DVM, measure resistance at speaker connector from terminal "B" and ground.	Resistance is infinite.	GO to step 4.
	Resistance is NOT infinite.	Repair short to ground in speaker feed circuit.
4. Reconnect speaker. With a DVM, measure resistance at radio connector of speaker feed circuits.	Resistance is between 4 ohms and 15 ohms.	Check for poor connections at radio or speaker. If OK, service radio.
	Resistance is NOT between 4 ohms and 15 ohms.	Check for poor connections at speaker or in-line connectors or for open in speaker feed circuits.

TAPE PLAYER IS INOPERATIVE

TEST	RESULT	ACTION
1. Check tape player for obstruction through tape door.	Obstruction observed.	GO to step 2.
	No obstruction observed.	Service radio.
2. Remove obstruction. NOTICE: Improper removal may damage tape player. Inspect and clean moving parts and tape head or use cleaning cassette. Insert diagnostic test tape from J-39916 as described in Section 9A.	Test tape operates.	Fault was corrected.
	Test tape inoperative.	Service radio.

TAPE PLAYS WEAK, SLOW OR GARBLED

TEST	RESULT	ACTION
1. Inspect and clean moving parts and tape head or use cleaning cassette.	Does not play back.	GO to step 2.
	Plays OK.	Advise periodic cleaning.
2. Perform motor speed test with diagnostic test tape from J-39916 as described in SECTION 9A.	Motor speed not OK.	Service radio.
	Motor speed OK.	Fault was with tape.

RADIO AND POWER AMPLIFIER**COMPACT DISC PLAYER DOES NOT OPERATE PROPERLY**

TEST	RESULT	ACTION
1. Observe operation of compact disc player.	CD player skipping or muting.	Check for proper insertion, scratches, dirt or finger prints and clean if necessary. Is usual route over rough (or dirt) road? If so, condition may be normal. Attempt to duplicate on good road surface. Test with known "good" disc (preferably new disc). Some discs may contain marks not readily visible that may make one track or the entire disc unplayable. If previous steps fail, service radio.
	Displaying "ERR" or disc ejected.	"ERR" appears if disc is inserted upside down, dirty, badly scratched or wet. "ERR" appears if moisture has condensed on the disc (if a cold disc is inserted into a hot player or visa versa). Allow up to an hour to evaporate condensation. Check with known good disc - verify to customer. Very high internal instrument panel temperatures may cause eject. If previous tests fail, service radio.

NOISE AND/OR POOR RECEPTION

TEST	RESULT	ACTION
1. Attempt to duplicate complaint condition in each ignition switch key position.	Complaint condition verified.	GO to step 2.
	Complaint condition NOT verified.	Contact customer for explanation of complaint condition.
2. Check for technical service bulletins. Perform "Antenna System Test," make any necessary repairs and then return to this chart. attempt to duplicate the complaint condition again.	Complaint condition duplicated again.	GO to step 3.
	Complaint condition NOT duplicated.	Complaint condition corrected, no further action required.
3. Ignition switch to "RUN," start engine.	Is the complaint condition duplicated only in this position.	GO to step 4.
	Is the complaint condition NOT duplicated only in this position.	GO to step 4.
4. Is the vehicle equipped with aftermarket electronic equipment.	Aftermarket equipment is present.	GO to step 6.
	Aftermarket equipment is NOT present.	Check for stored diagnostic trouble codes (DTC's) (Refer to SECTION 6E). Check the integrity of the ignition system (proper spark plug wire routing, no misfiring, etc. Refer to SECTION 6D4). Check the integrity of the engine compartment grounds. Check for malfunctioning relays, solenoids or other components which may be including "noise" or poor reception. If OK, contact technical assistance for further instructions.

RADIO AND POWER AMPLIFIER

TEST	RESULT	ACTION
5. Check for proper installation of aftermarket electronic equipment (refer to SECTION 8A-4).	Were the G.M. guidelines NOT followed.	Correct the installation and retest for the complaint condition.
	Were the G.M. guidelines followed.	Check for stored diagnostic trouble codes (DTC's) (Refer to SECTION 6E). Check the integrity of the ignition system (proper spark plug wire routing, no misfiring, etc. Refer to SECTION 6D4). Check the integrity of the engine compartment grounds. Check for malfunctioning relays, solenoids or other components which may be including "noise" or poor reception. If OK, contact technical assistance for further instructions.
6. Check for proper installation of aftermarket electronic equipment (refer to SECTION 8A-4).	Aftermarket equipment is present.	GO to step 7.
	Aftermarket equipment is NOT present.	GO to step 10.
7. Check for proper installation of aftermarket electronic equipment (refer to SECTION 8A-4).	Were the G.M. guidelines followed.	GO to step 8.
	Were the G.M. guidelines NOT followed.	Correct the installation and retest for complaint condition.
8. Remove fuses and circuit breakers (one at a time) until the complaint condition has been eliminated.	Complain condition is eliminated.	GO to step 9.
	Complaint condition is NOT eliminated.	Contact technical assistance for further instructions.
9. Mark the complaint fuse(s) and re-install all fuses and circuit breakers. Refer to SECTION 8A-10 and 8A-11 identify all systems and components powered by the complaint fuse(s)/circuit breakers(s) (one at a time) until the complaint condition has been eliminated.	Complaint causing component is identified.	Check the ground integrity of the complaint causing component. If OK, contact technical assistance for further instructions.
	Complaint causing component is identified.	Contact technical assistance for further instructions.
10. Remove fuses and circuit breakers (one at a time) until the complaint condition has been eliminatd.	Complaint condition is eliminated.	GO to step 11.
	Complaint condition is NOT eliminated.	Contact technical assistance for further instructions.
11. Mark the complaint fuse(s) and re-install all fuses and circuit breakers. Refer to SECTION 8A-10 and 8A-11 to indentify all systems and components powered by the complaint fuse(s)/circuit breaker(s) (one at a time) until the complaint condition has been eliminated.	Complaint causing component is identified.	Check the ground integrity of the complaint causing component. If OK, contact technical assistance for further instructions.
	Complaint causing component is indentified.	Contact assistance for further instructions.

RADIO AND POWER AMPLIFIER**POWER AMPLIFIER DOES NOT OPERATE**

TEST	RESULT	ACTION
1. Place Ignition switch in ACC or RUN position. Connect test lamp from PNK (314) wire at power amplifier relay connector to ground. Turn radio control head to ON position.	Test lamp lights.	GO to step 2.
	Test lamp does not light.	LOCATE and REPAIR open in PNK 314 wire between power amplifier relay connector and radio receiver connector. If wire is good, REMOVE receiver and send in for repair.
2. Connect test lamp from PNK 314 wire to BLK (150) wire at power amplifier relay connector.	Test lamp lights.	GO to step 3.
	Test lamp does not light.	LOCATE and REPAIR open in BLK (150) wire between power amplifier relay connector and I/P ground G200.
3. Connect test lamp from ORN (640) wire at power amplifier relay connector to ground.	Test lamp does not light.	GO to step 4.
	Test lamp lights.	LOCATE and REPAIR open in ORN (640) wire between power amplifier relay connector C253 and I/P fuse block.
4. Connect test lamp from ORN 360 wire at power amplifier relay connector to ground.	Test lamp does not light.	GO to step 5.
	Test lamp lights.	REPLACE power amplifier relay.
5. Connect test lamp from ORN (360) wire to BLK (150) wire at power amplifier connector.	Test lamp does not light.	REMOVE power amplifier and send in for repair.
	Test lamp lights.	LOCATE and REPAIR open in BLK (150) wire between power amplifier connector I/P ground G200.

NO SOUND OR DISTORTED SOUND FROM REAR SPEAKERS

TEST	RESULT	ACTION
1. Disconnect suspect speaker connector. Set ohmmeter on Rx1 scale. Connect ohmmeter across terminals of suspect speaker.	Speaker pops.	GO to step 2.
	No noise.	REPLACE speaker.
2. Place ignition switch in ACC or RUN position and turn radio ON. Tune radio to a strong signal. Connect voltmeter across suspect speaker.	Varying around 1 volt AC.	LOCATE and REPAIR open or short in YEL (116), BRN (199), DK BLU (46), LT BLU (115) between radio connector and power amplifier connector WHT (1859), WHT (1959), TAN (1855), RED (1955) between suspected speaker connector and power amplifier connector.
	No voltage or voltage greater than 1 volt AC.	REMOVE power amplifier and send in for repair.

RADIO AND POWER AMPLIFIER

ANTENNA SYSTEM TEST

TEST	RESULT	ACTION
1. Disconnect negative battery cable. Disconnect Antenna lead in connector at the radio receiver. With a DVM, measure resistance between the coax(outer conductor) connector and the negative battery cable. NOTICE: To avoid misdiagnosis be sure to "zero" meter before taking measurements.	The resistance is LESS than 0.15 ohms.	GO to step 2.
	The resistance value is GREATER than 0.15 ohms.	CHECK the base of the antenna for a good connection to body ground. CHECK the coaxial cable interconnects for a poor connection or corrosion. CHECK the ground connection from the battery negative cable to the body. REPAIR the antenna ground circuit as necessary.
2. GRASP the antenna mast. While observing the DVM, wiggle the antenna.	The DVM indicates NO intermittent continuity.	GO to step 3.
	The DVM indicates intermittent continuity.	CHECK the base of the antenna for a good connection to body ground. CHECK the coaxial cable interconnects for a poor connection or corrosion. CHECK the ground connection from the battery negative cable to the body. REPAIR the antenna ground circuit as necessary.
3. With a DVM, measure resistance between the radio coaxial lead-in connector (center conductor) and the antenna mast. NOTICE: To avoid misdiagnosis be sure to "zero" DVM before taking measurements.	The measured resistance approximately equals less than: - 2 ohms for coax type RG-58 or RG-59. - 3.5 ohms for for coax type RG-62 or RG-62M.	GO to step 4.
	The measured resistance approximately equals NOT less than: - 2 ohms for coax type RG-58 or RG-59. - 3.5 ohms for coax type RG-62 or RG-62M.	CHECK the coaxial cable interconnects for a poor connection or corrosion. REPAIR/REPLACE the antenna coaxial circuit as necessary and return to the NOISE AND/OR POOR RECEPTION CHART.
4. While observing the DVM, wiggle the antenna coax.	The DVM indicates intermittent continuity.	CHECK the coaxial cable interconnects for a poor connection or corrosion. REPAIR/REPLACE the antenna coaxial circuit as necessary and the return to the NOISE AND/OR POOR RECEPTION CHART.
	The DVM indicates NO intermittent continuity.	RETURN to the NOISE AND/OR POOR RECEPTION CHART.

CIRCUIT OPERATION

The noise sniffer can be used along with the vehicle's Radio to locate "hot spots" which are generating Radio noise interference. These "hot spots" can be found in the harnesses, in the upper part of the dash or even between the hood and the windshield. The sniffer can be made from an old piece of antenna lead-in from a mast or power antenna. The longer the lead-in the better. Make the noise sniffer as shown in Figure 1. The 2" section with the black coating and braided shield stripped back becomes the antenna when the sniffer is plugged into the Radio's antenna socket. It can then be used to probe and search out "hot spots."

1. While listening to the complaint noise, disconnect the antenna and plug the sniffer into the antenna socket.
2. Turn the Radio volume up.
3. Search for the noise source, keeping fingers off the 2" probe. When checking for noise on wire, the best results will be achieved when the sniffer is placed parallel to the wire, see Figure 2.

CUSTOMER'S TIPS

HOW TO ENJOY FM STEREO

1. Select Stations Within Range - The best FM fidelity will be obtained from stations within the 10-40 mile range. Beyond that, "noise" or "flutter" may begin to appear due to the "line of sight" range limitations of FM signals. SOLUTION: Reduce treble response by moving the treble control down (or to the left) in fringe areas. On EQ Radios, slowly slide the 10K control down.
2. Realize Tall Structures Can Interfere - Tall buildings or hills may cause "shadows" or cancellation of FM signals (this is similar to the "ghost" or "flutter" effect seen on television sometimes when airplanes are flying in the vicinity). It will sound like a "pop" or momentary "hiss". SOLUTION: Reduce the treble or 10K setting to a lower volume.
3. Interference From Another Station - Although the circuits in DELCO receivers are the most advanced available, there are rare instances where a station being listened to will be interfered with by another station. This only happens when the stations are on almost the same frequency and certain geographical criteria are present. SOLUTION: Select another station or switch to a tape or CD.

HOW TO ENJOY AM

Reception Characteristics

AM does not have the flutter characteristics of FM (caused by tall buildings, hills, etc.) However, it is subject to interference from powerlines, neon signs, atmospheric conditions and unwanted stations.

WAYS TO REDUCE NOISE

1. Move treble control down.
2. Tune to a stronger station.

CIRCUIT OPERATION

RADIO

Voltage to the Radio is available at all times through the ORN (1140) wire. This circuit provides voltage for radio station memory storage. It also provides voltage for the clock memory. With the Ignition Switch in ACC or RUN, voltage is supplied to the Radio through the RADIO Fuse and the YEL (43) wire. Each speaker has its own pair of leads. The Radio/Clock Display brightness is at full intensity with the Ignition Switch in ACC or RUN; voltage is supplied by the YEL (43) wire. When the Park or Headlamps are turned on, voltage is supplied to the Radio through the PPL/WHT (1382). When the Radio senses this signal, the Radio switches voltage for the display from the YEL (43) wire to the GRA (8) wire. The display brightness is then controlled by the Panel and Interior Lamps Control Switch. The radio illumination bulb voltage is supplied by the GRA (8) wire.

POWER AMPLIFIER (SUBURBAN ONLY)

The optional amplifier boosts the sound of the four rear speakers in the SUBURBAN when equipped with the premium sound system.

With the ignition switch in ACC or RUN position and the Radio Control Head ON, battery voltage is supplied to the Power Amplifier Relay through the PNK/BLK (143) and ORN (40) wires. The relay is grounded through the BLK (150) wire at the I/P ground G200. When the relay contacts close, battery voltage is supplied to the Power Amplifier through the ORN (140) wire, the ground is completed through the BLK (150) wire at the I/P ground G200.

COMPONENT LOCATION VIEWS

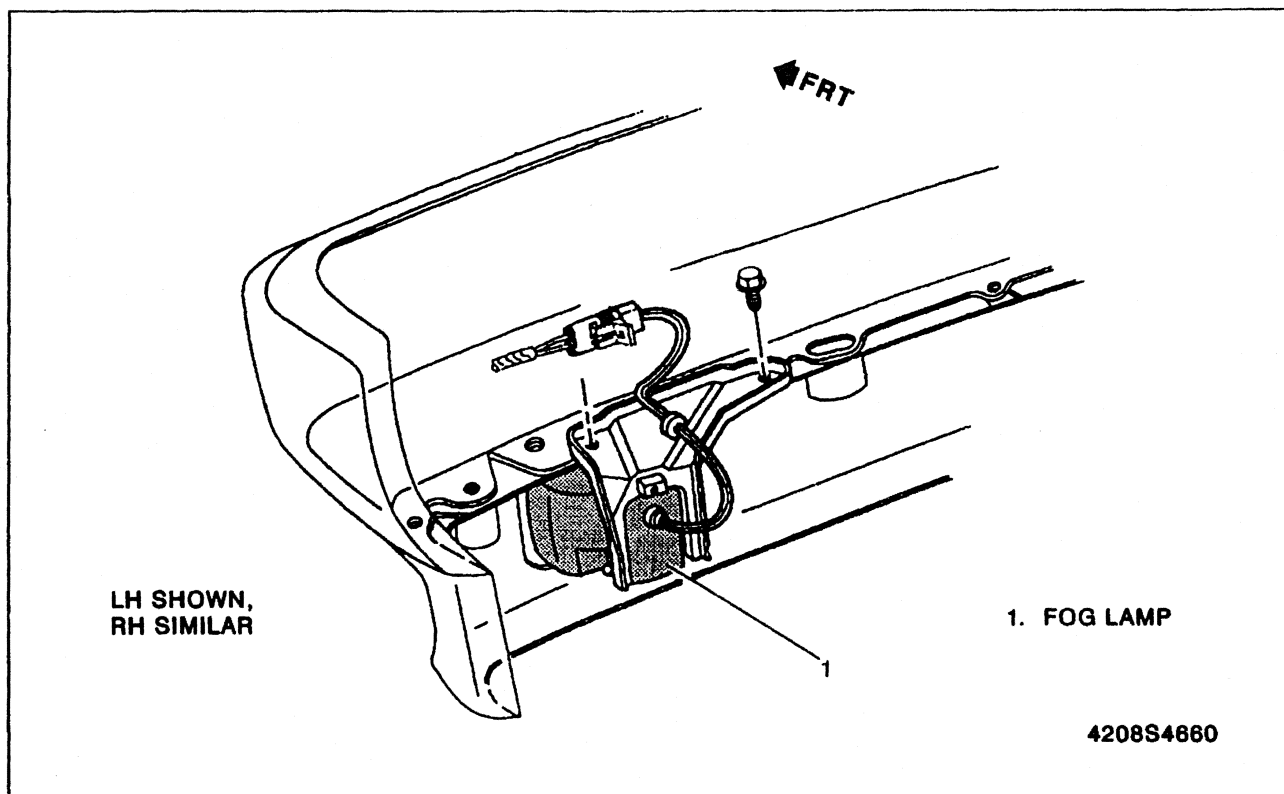


Figure 1—Fog Lamps

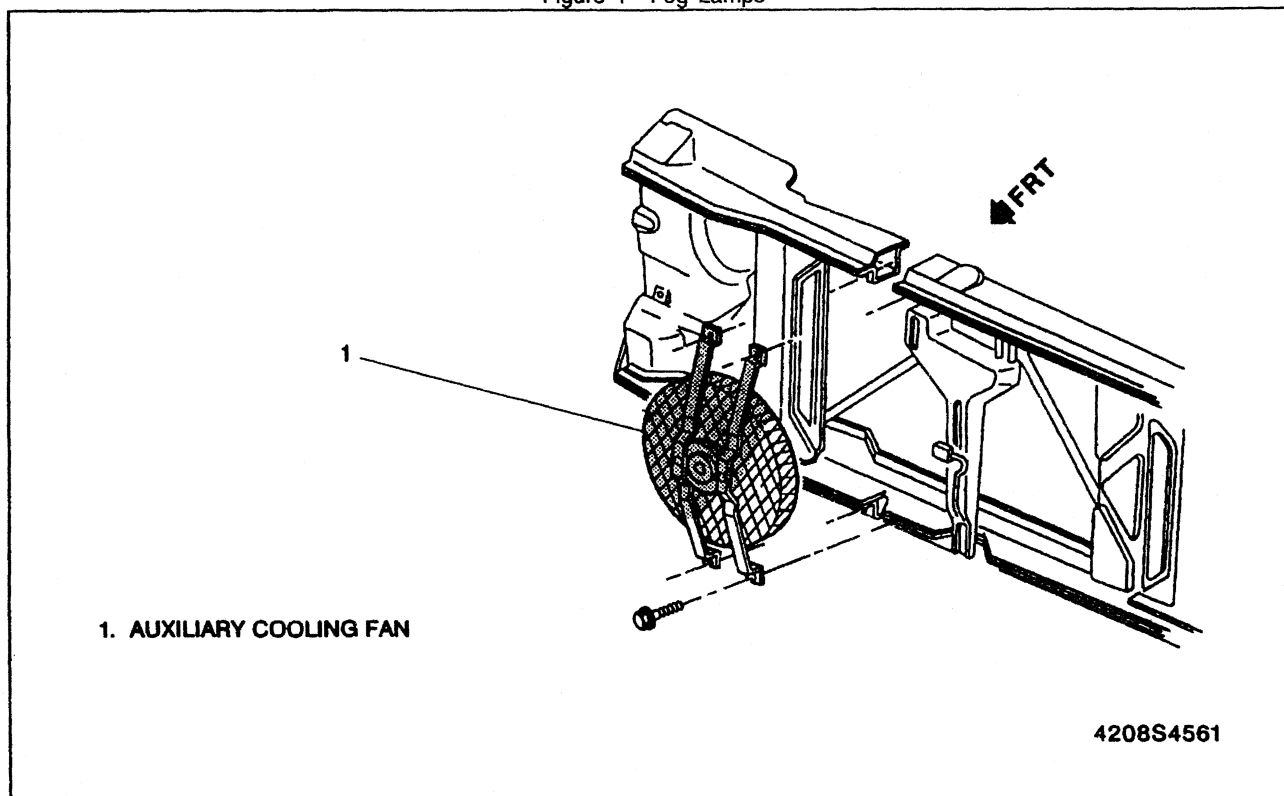


Figure 2—Auxiliary Cooling Fan

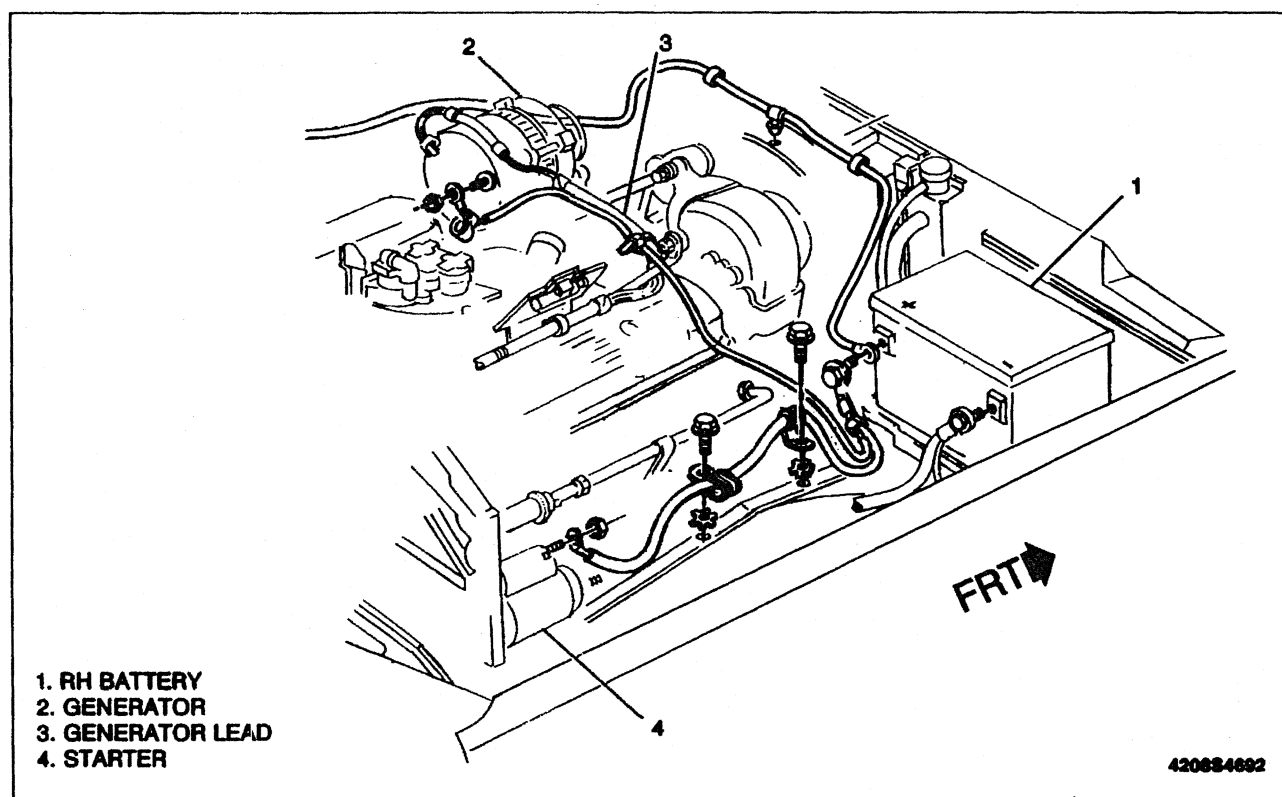


Figure 3—Battery Wiring, Gasoline Engines

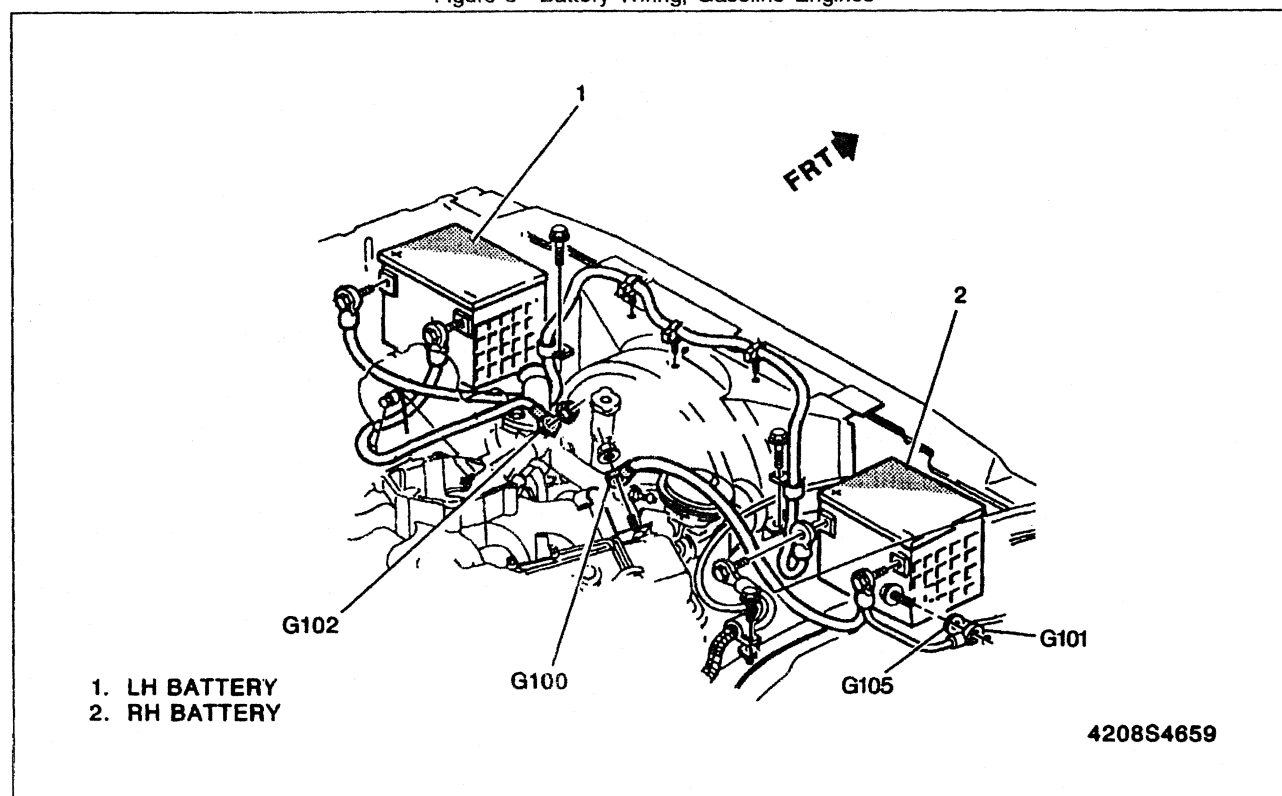


Figure 4—Battery Wiring, Diesel Engines

COMPONENT LOCATION VIEWS

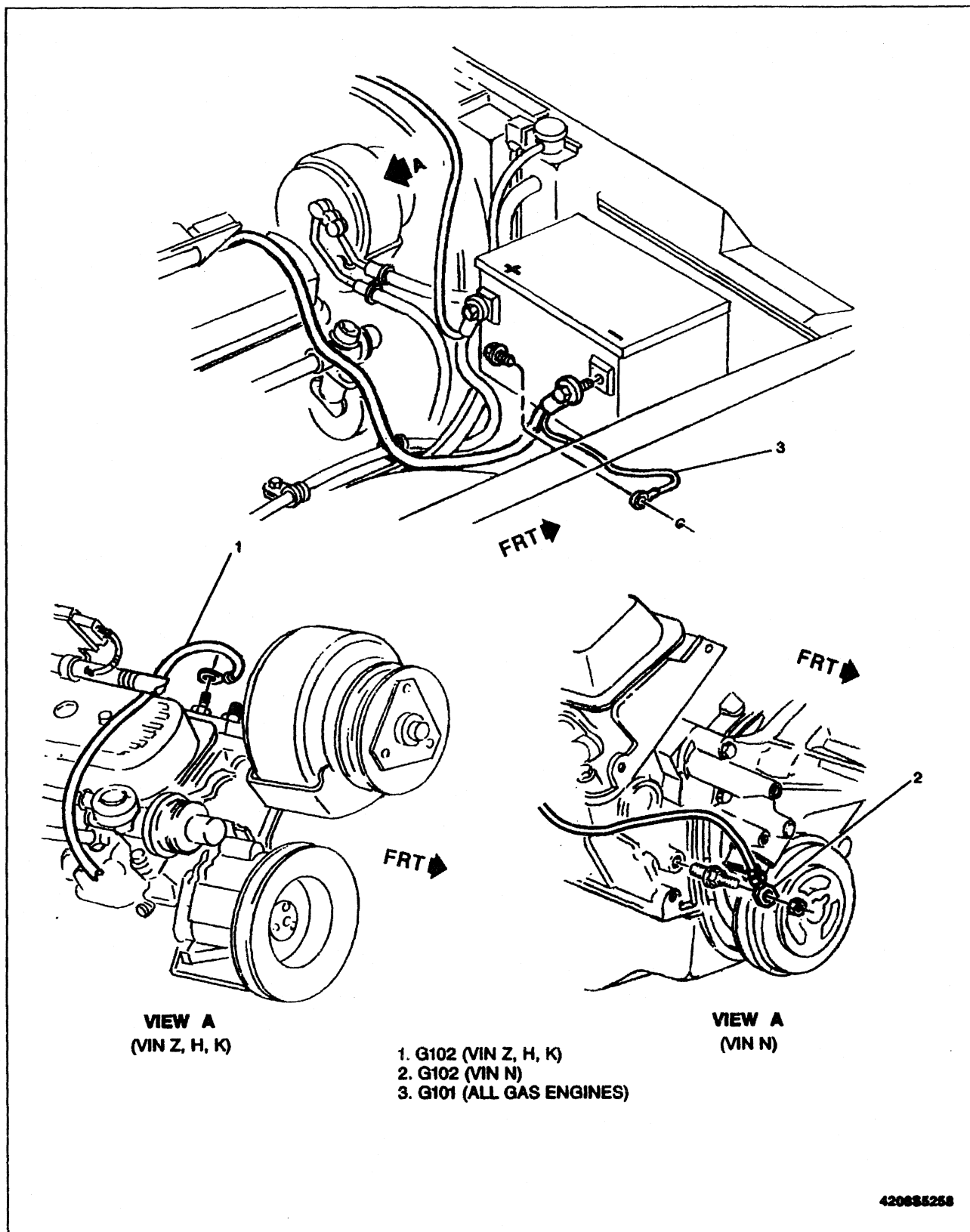


Figure 5—Negative Battery Cable Routing, Gasoline Engines

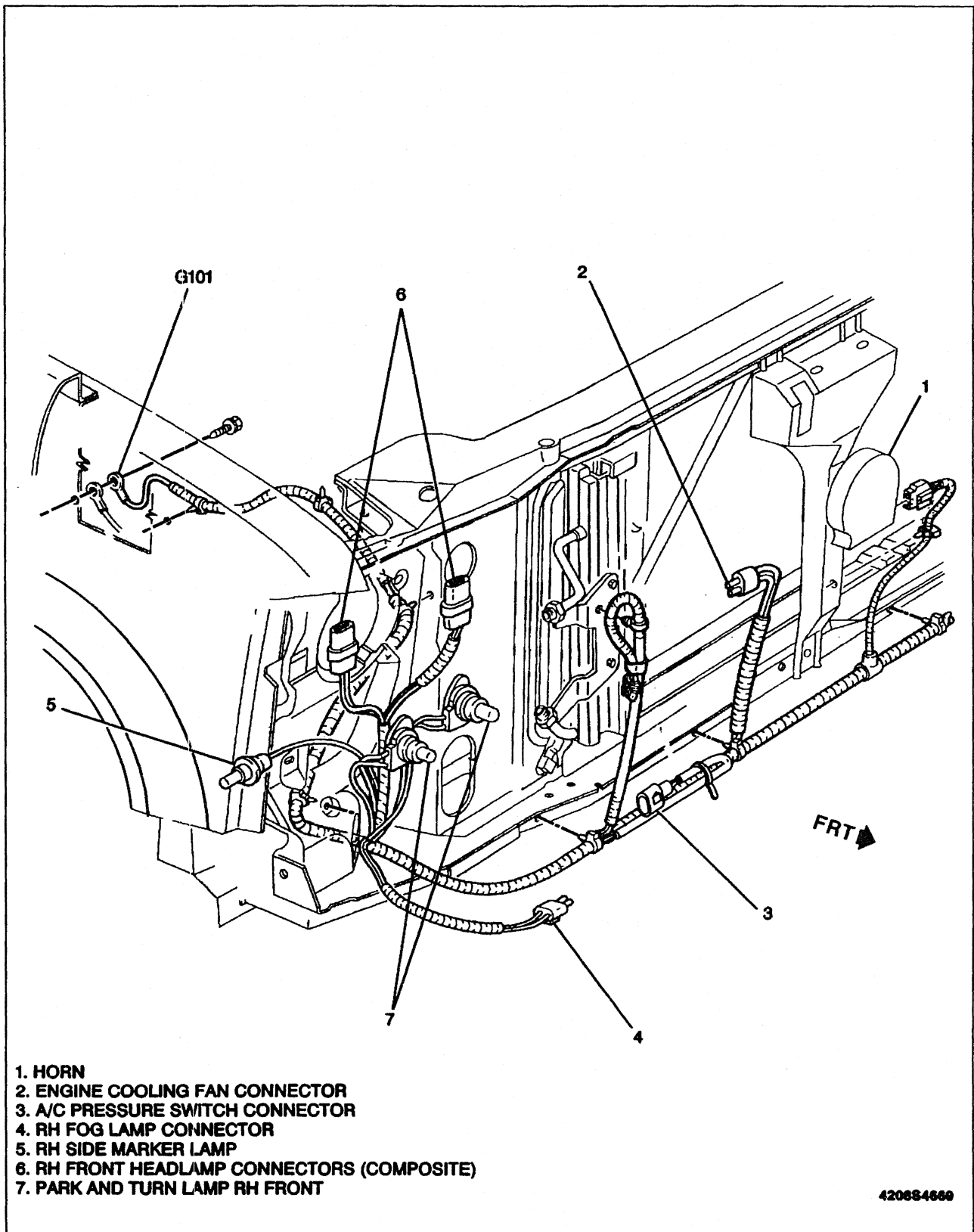


Figure 6—Forward Lamps Harness, RH Side

COMPONENT LOCATION VIEWS

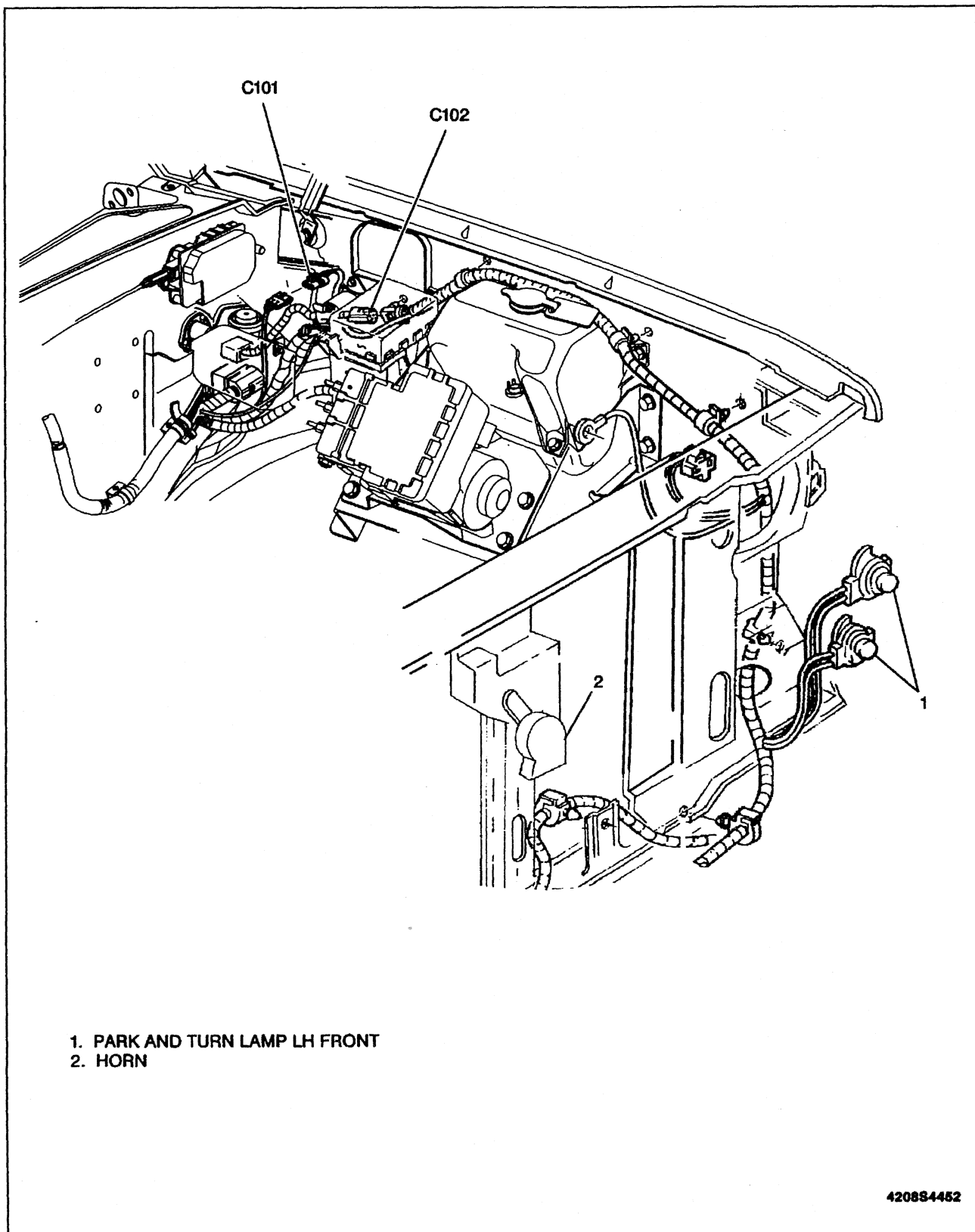


Figure 7—Forward Lamps Harness, LH Side

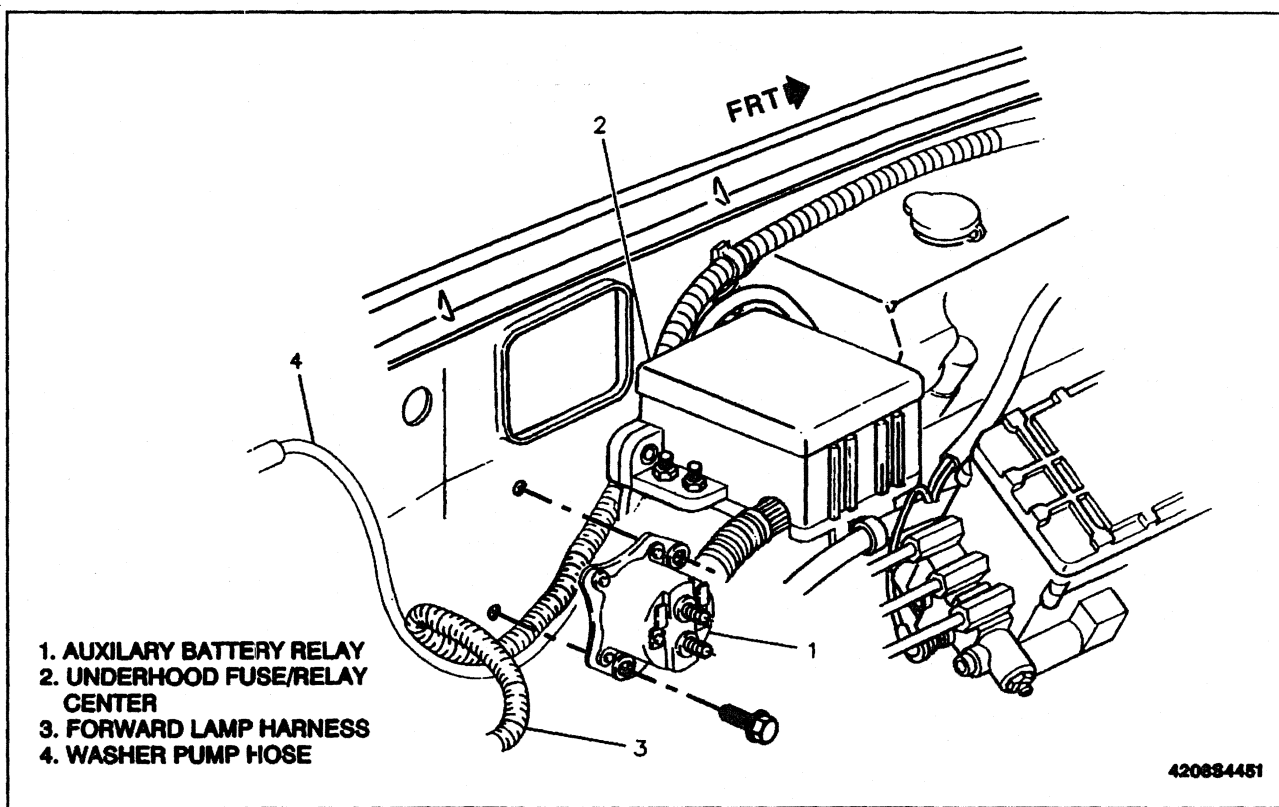


Figure 8—Auxiliary Battery Wiring

COMPONENT LOCATION VIEWS

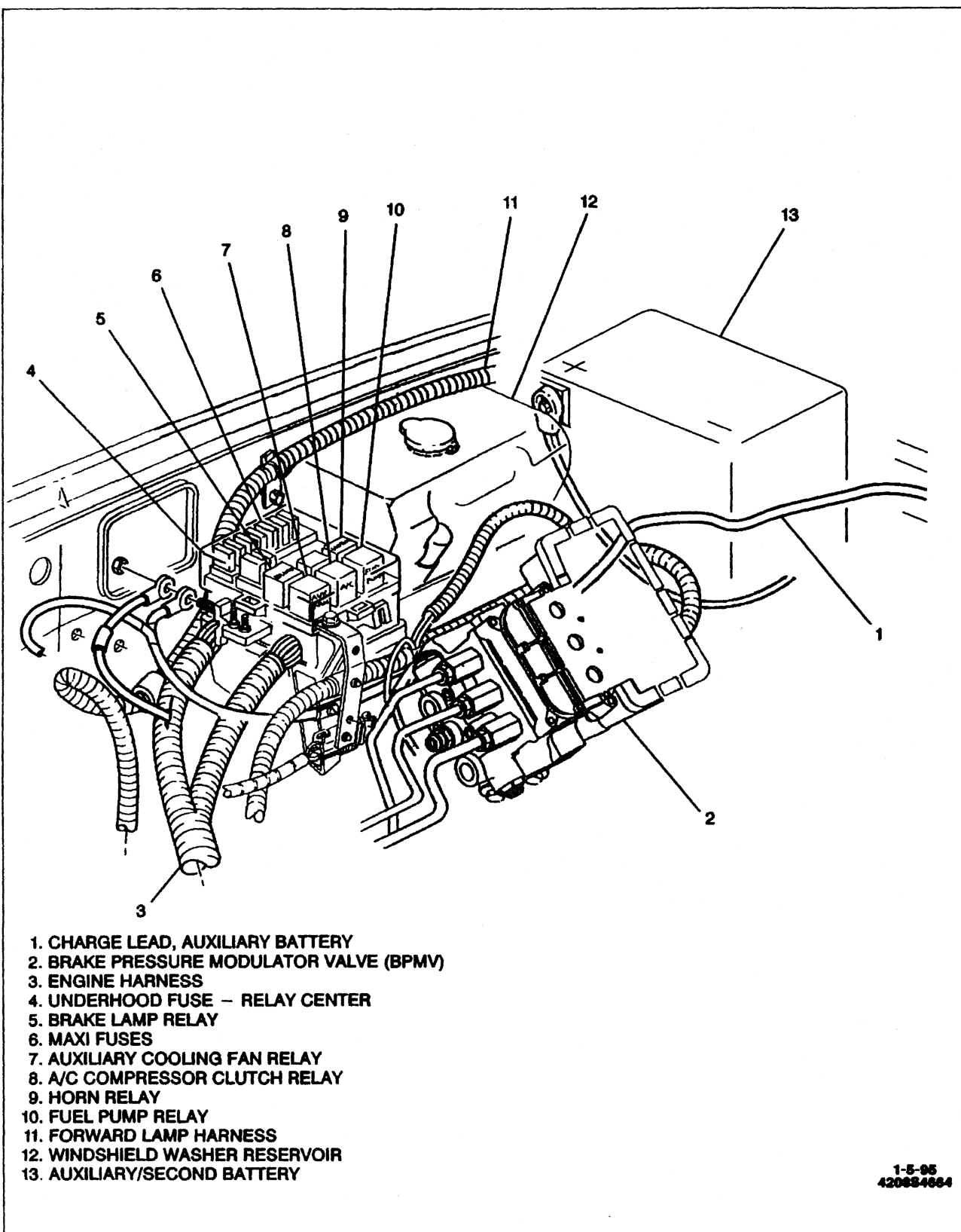


Figure 9—Underhood Fuse/Relay Center

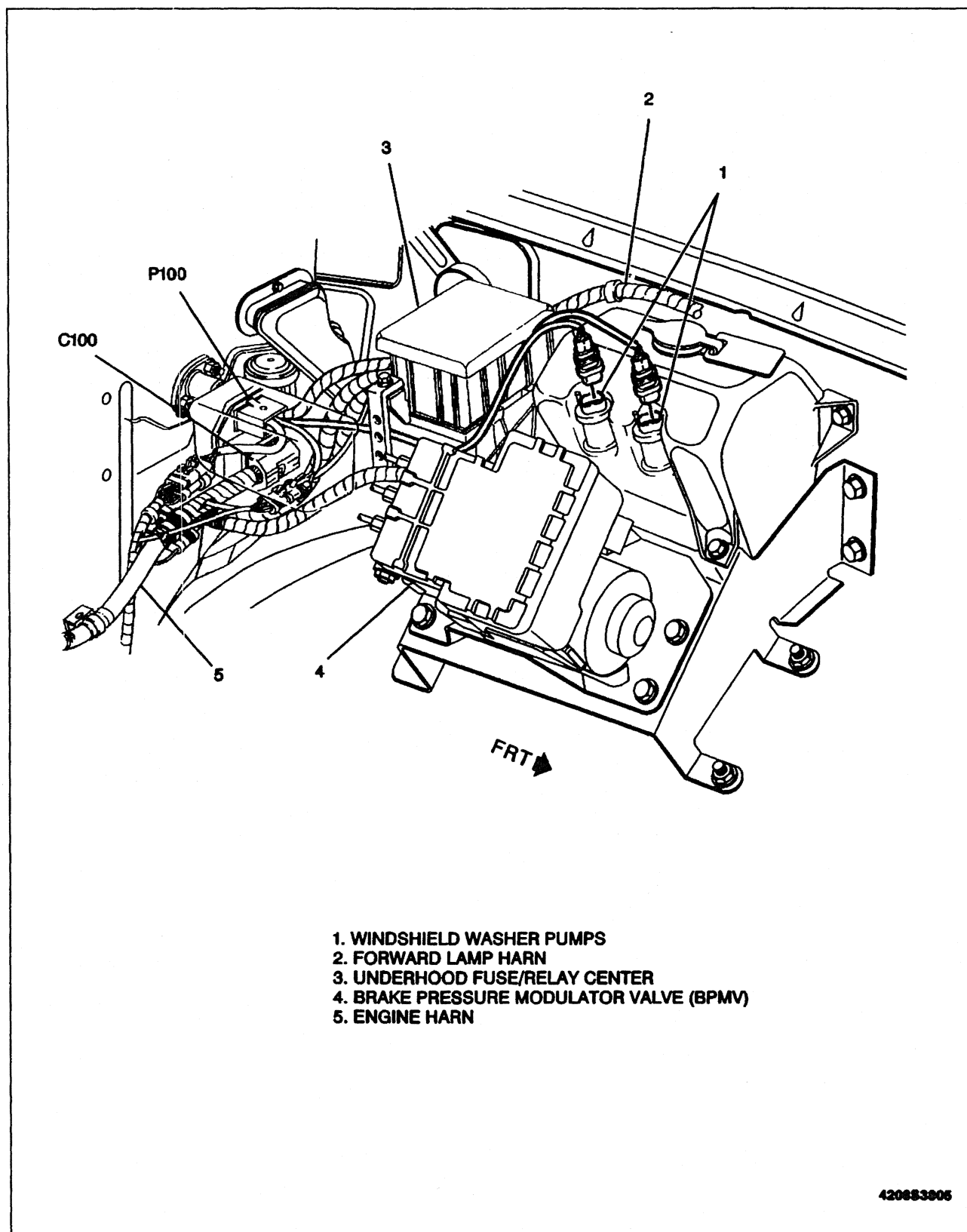
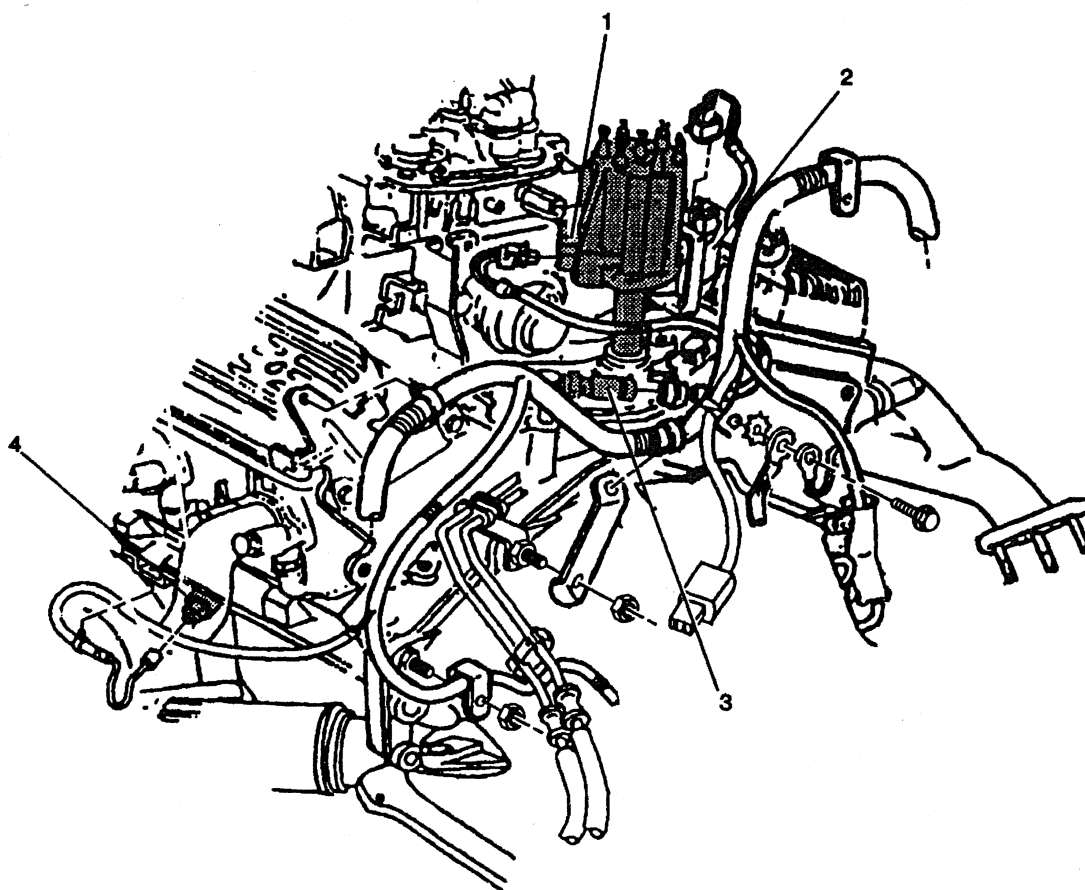


Figure 10—Wiper/Washer Reservoir (Except Suburban)

COMPONENT LOCATION VIEWS



- 1. DISTRIBUTOR IGNITION CONTROL MODULE
- 2. IGNITION COIL
- 3. FUEL PUMP OIL PRESSURE SWITCH AND SENDER
- 4. KNOCK SENSOR

↓ FRT

420884455

Figure 11—4.3L Engine, LH Side

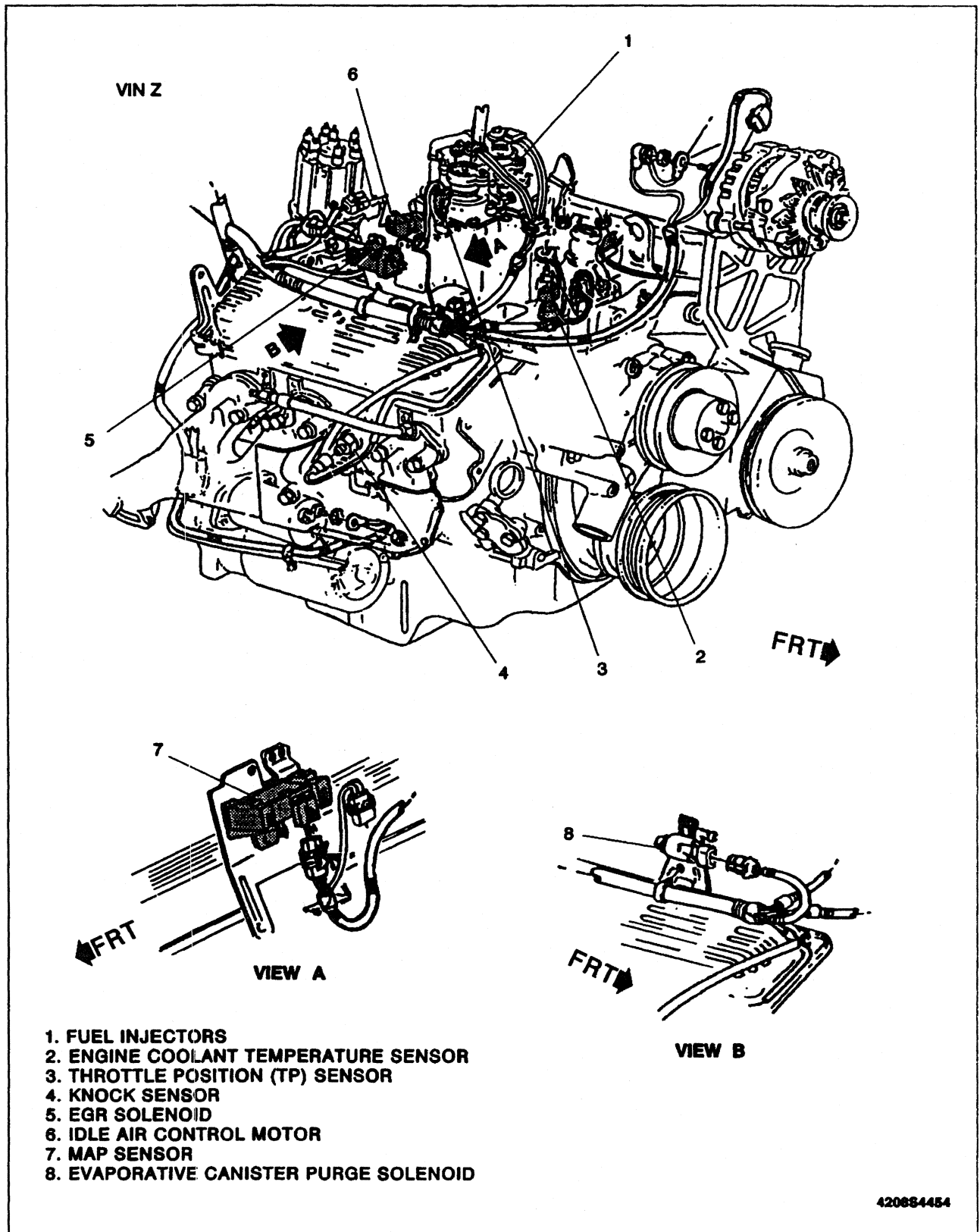


Figure 12—4.3L Engine, RH Side

COMPONENT LOCATION VIEWS

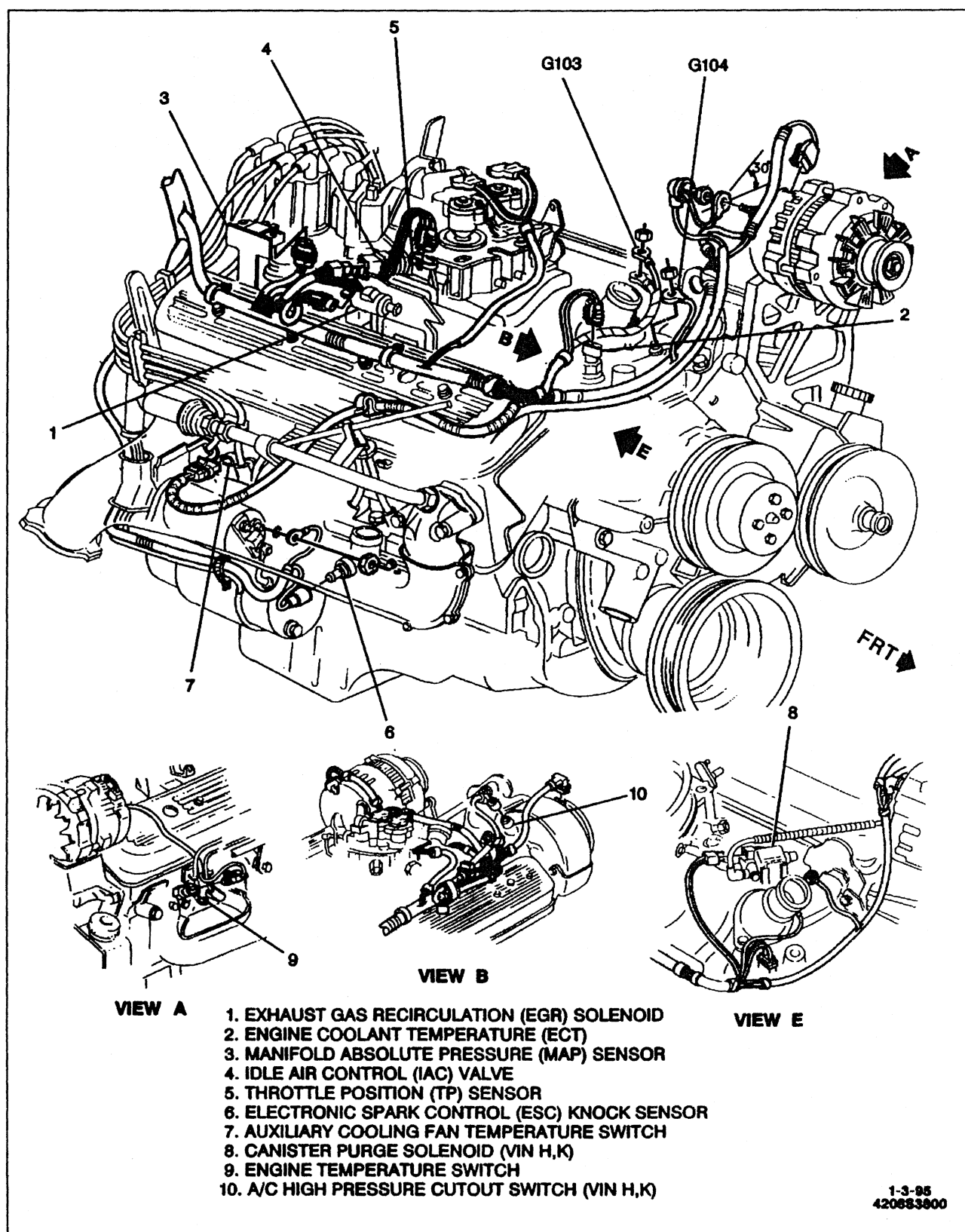


Figure 13—5.0L & 5.7L Engines, Front View

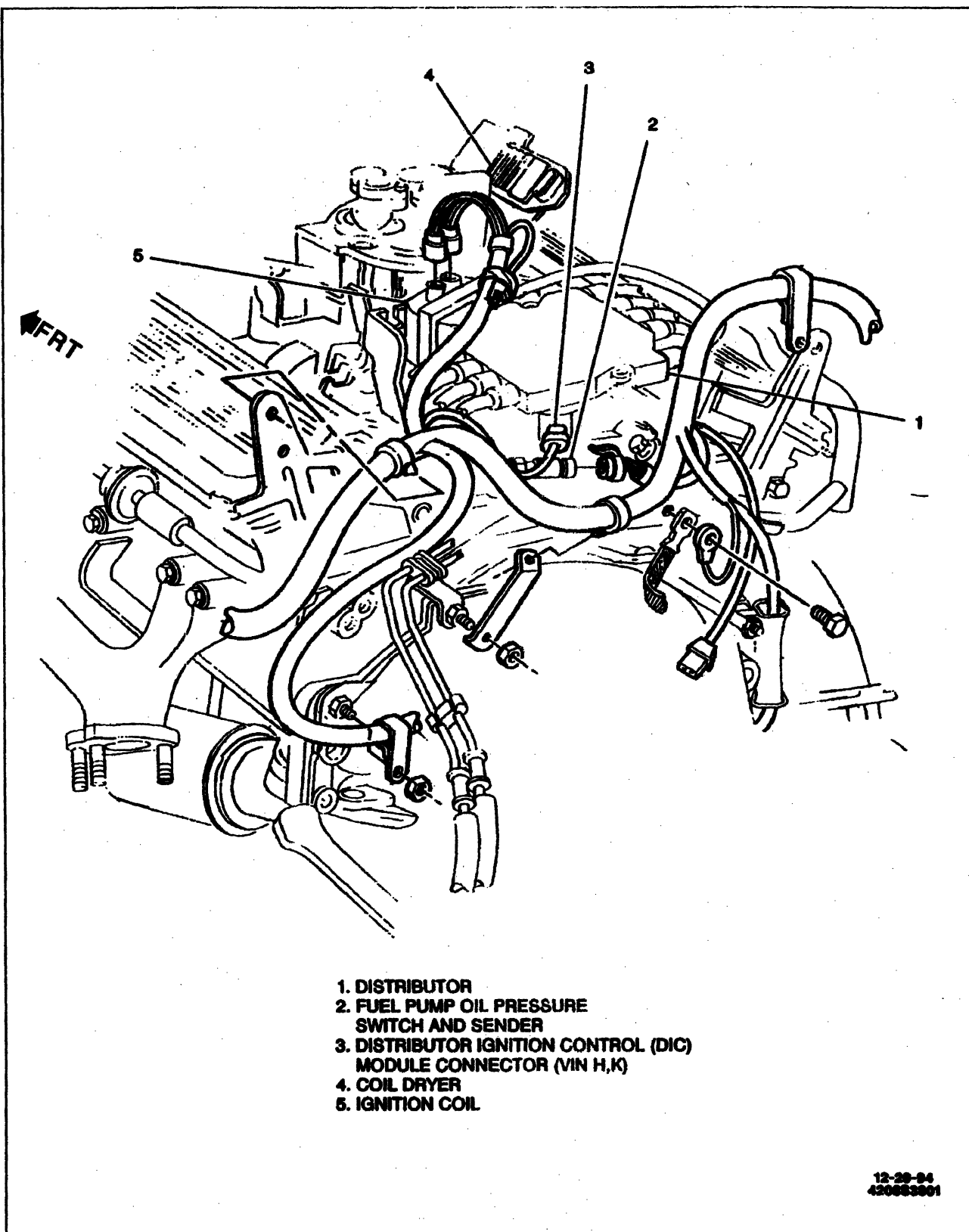


Figure 14—5.0L & 5.7L Engines, Rear View

COMPONENT LOCATION VIEWS

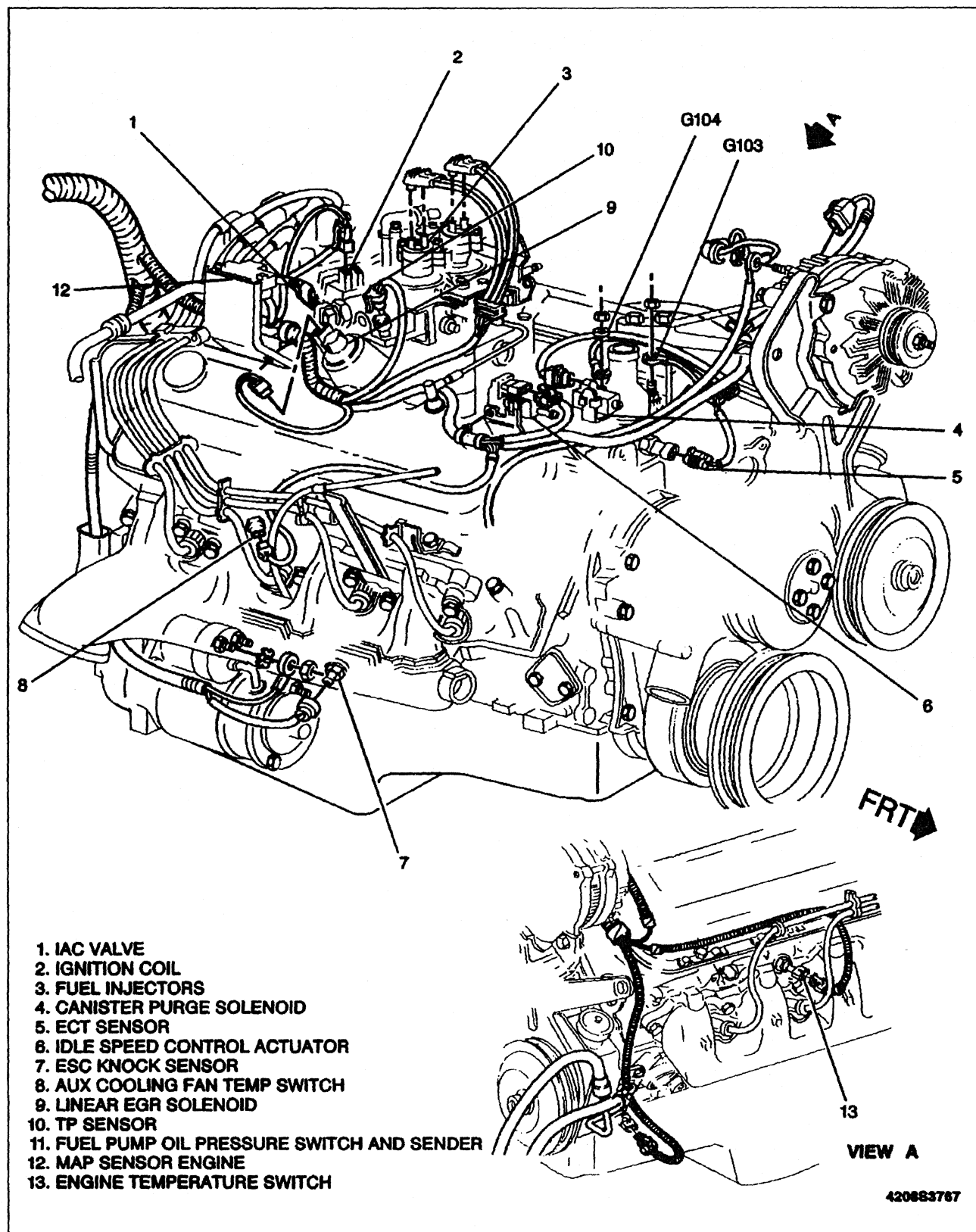


Figure 15—7.4L Engine

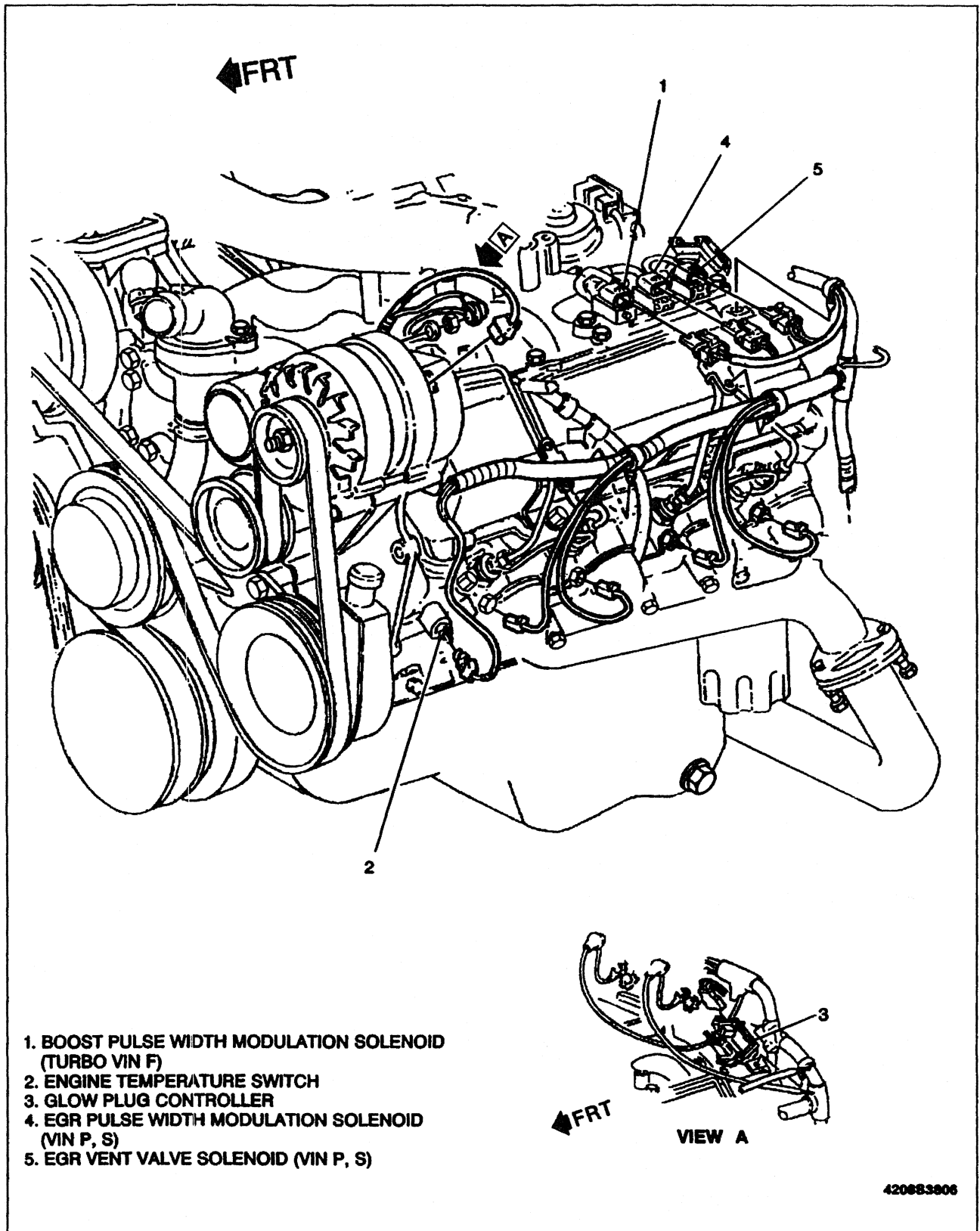


Figure 16—6.5L Diesel Engine Wiring, RH Side

COMPONENT LOCATION VIEWS

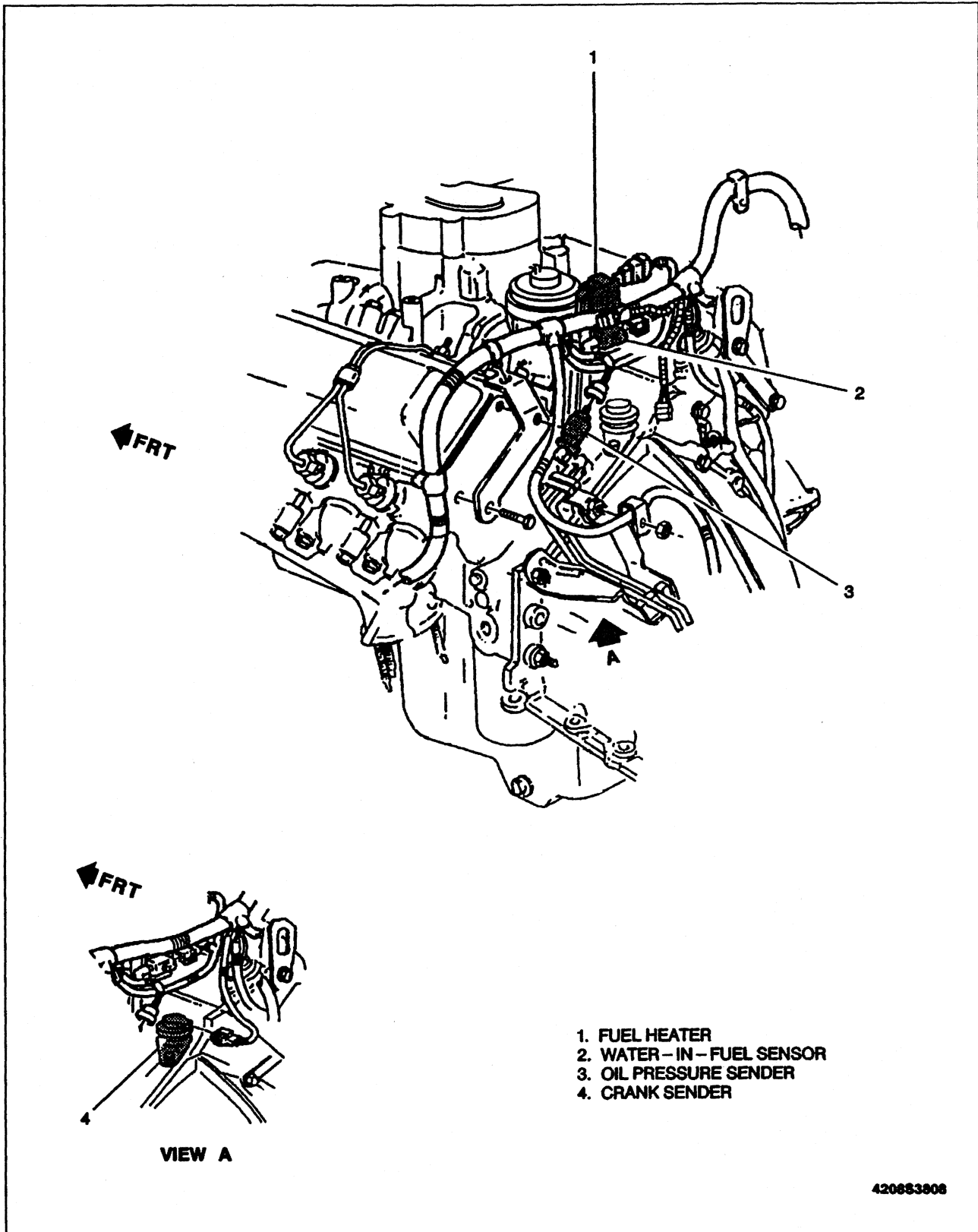
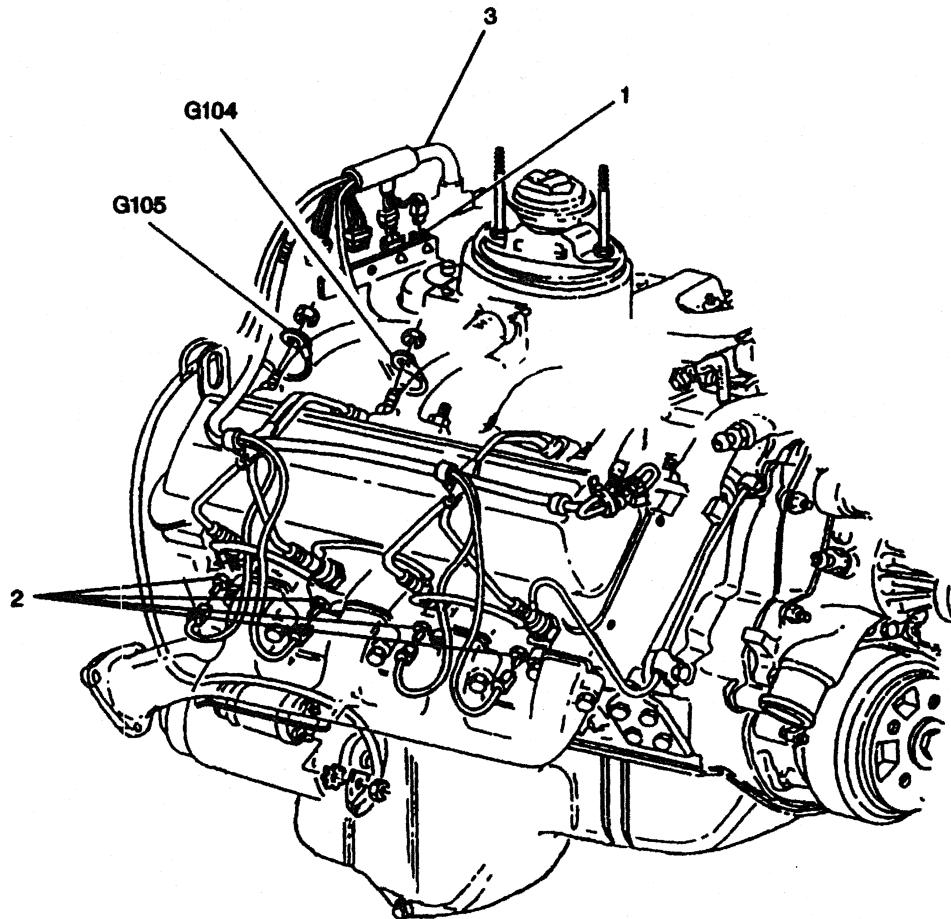


Figure 17—6.5L Diesel Engine Wiring, Rear View



- 1. WATER-IN-FUEL SENSOR
- 2. GLOW PLUGS
- 3. ENGINE HARNESS

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Figure 18—6.5L Diesel Engine Wiring, LH Side

COMPONENT LOCATION VIEWS

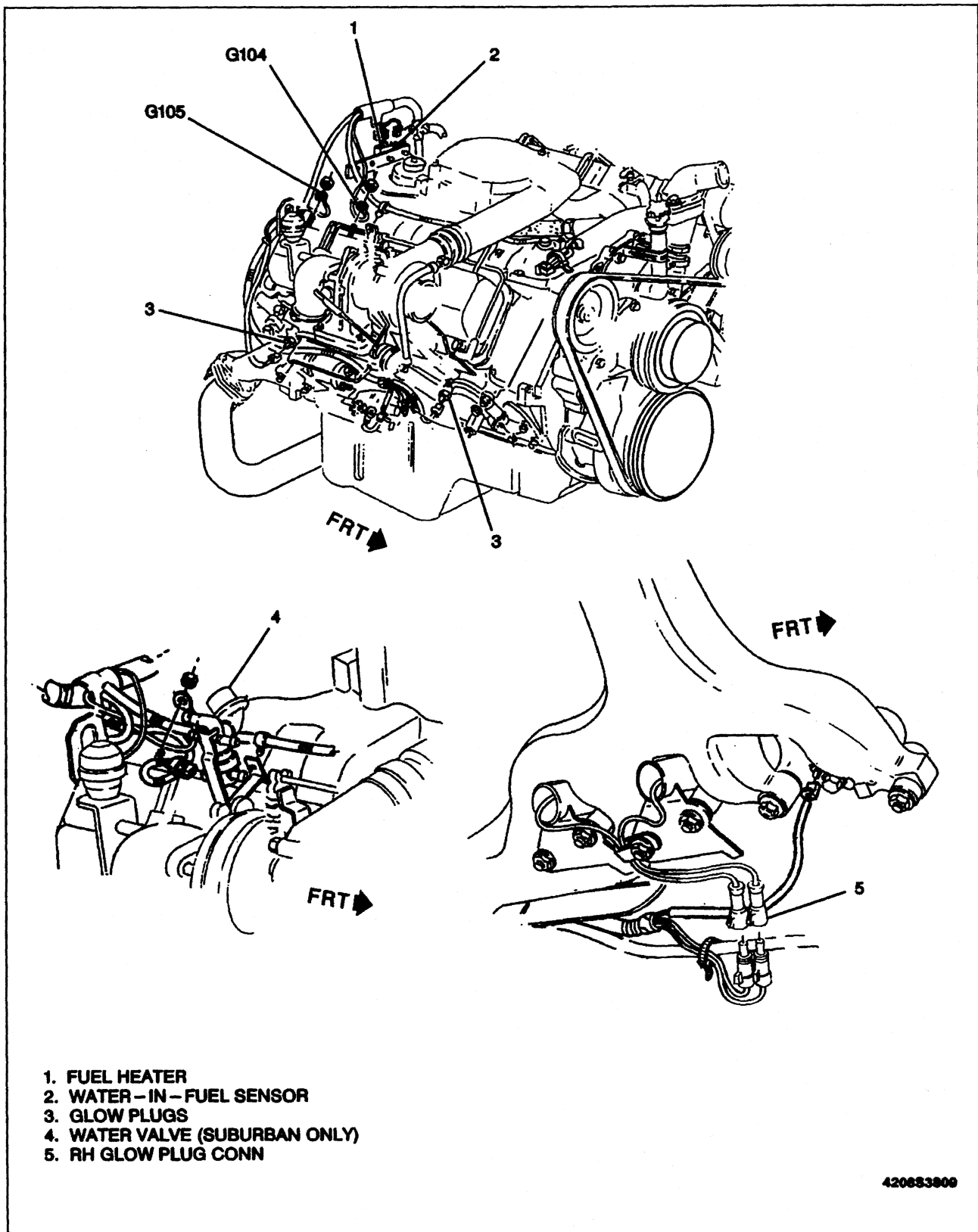


Figure 19—6.5L Turbo Diesel

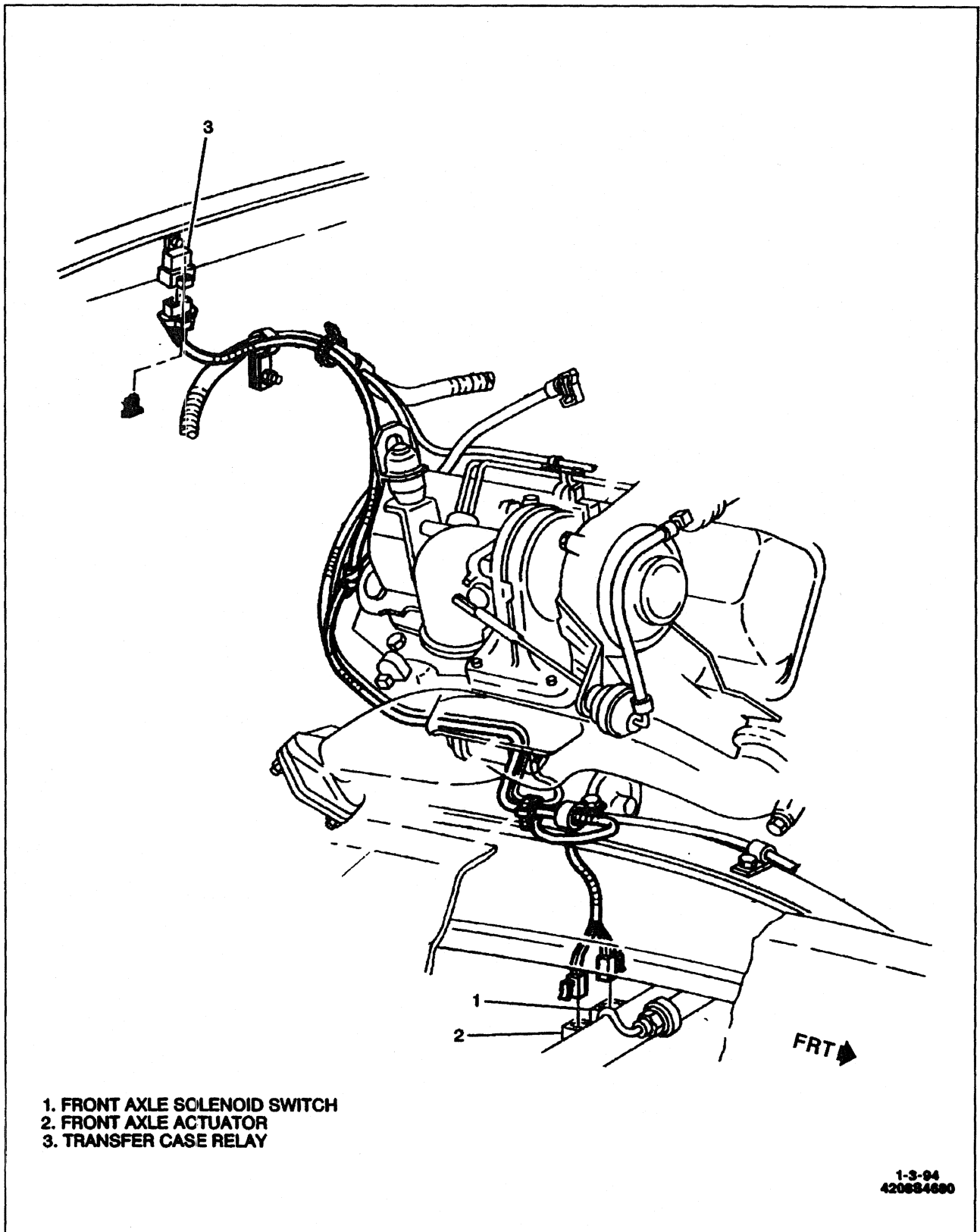


Figure 20—Four-Wheel Drive Relay

COMPONENT LOCATION VIEWS

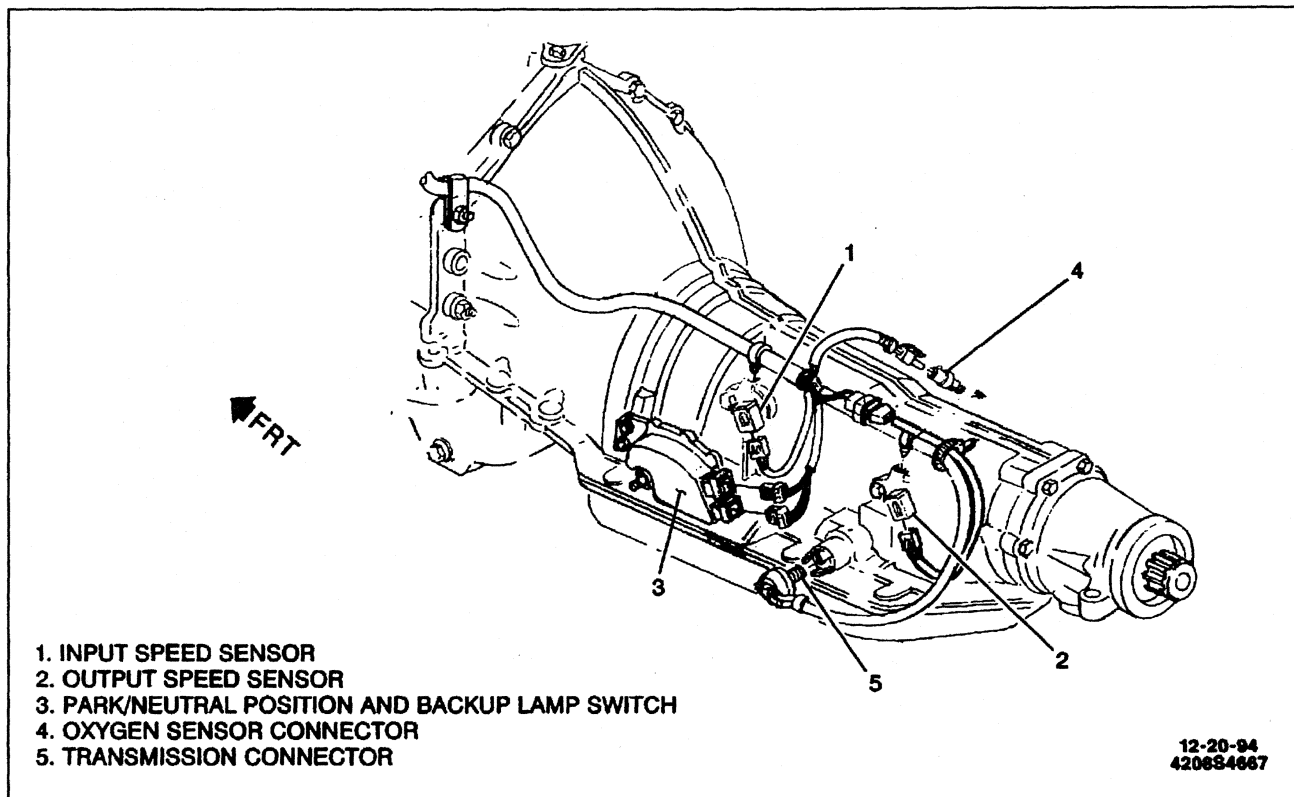


Figure 21—HD Electronic 4-Speed Automatic Overdrive Transmission

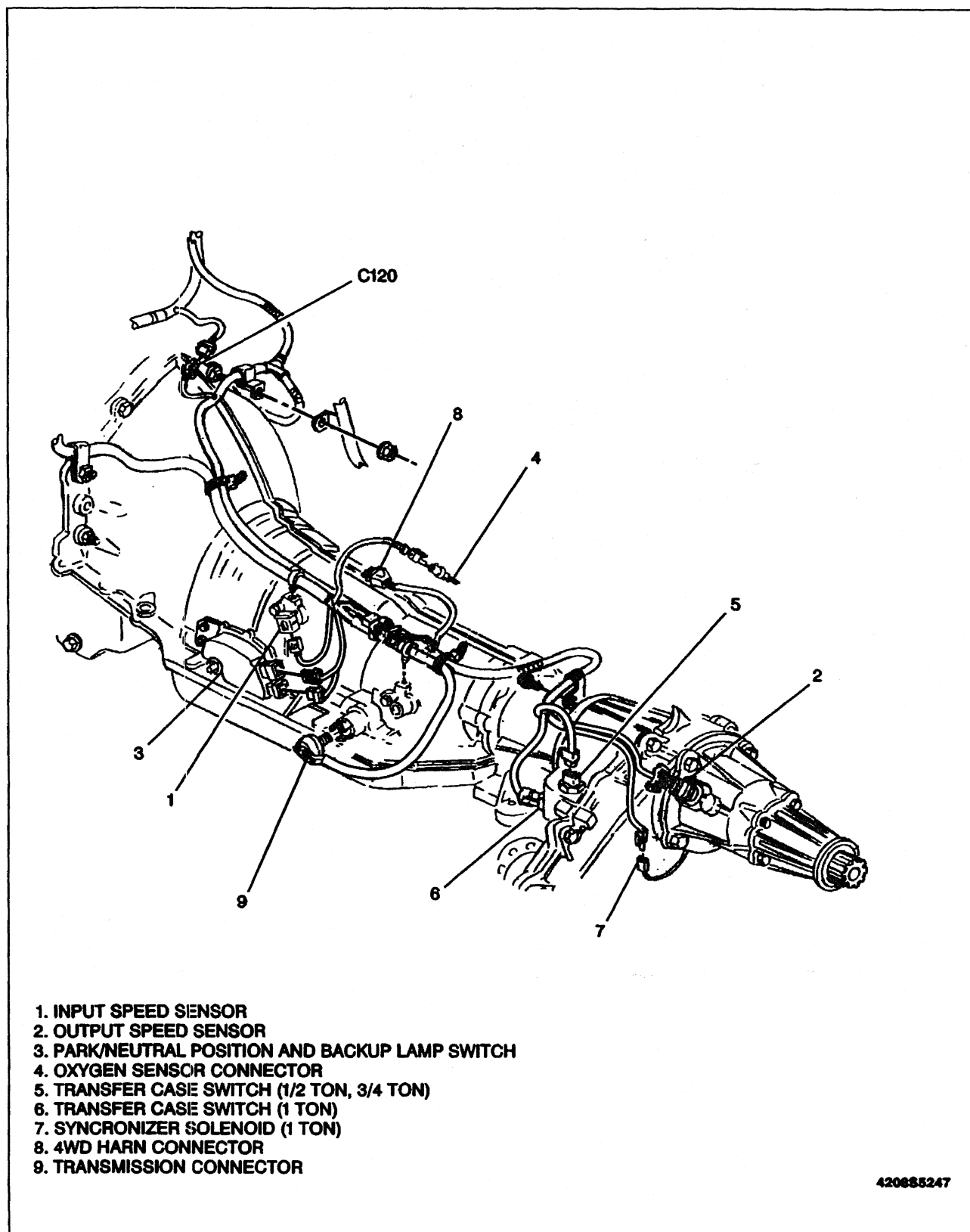


Figure 22—HD Electronic 4-Speed Automatic Overdrive Transmission W/4WD

COMPONENT LOCATION VIEWS

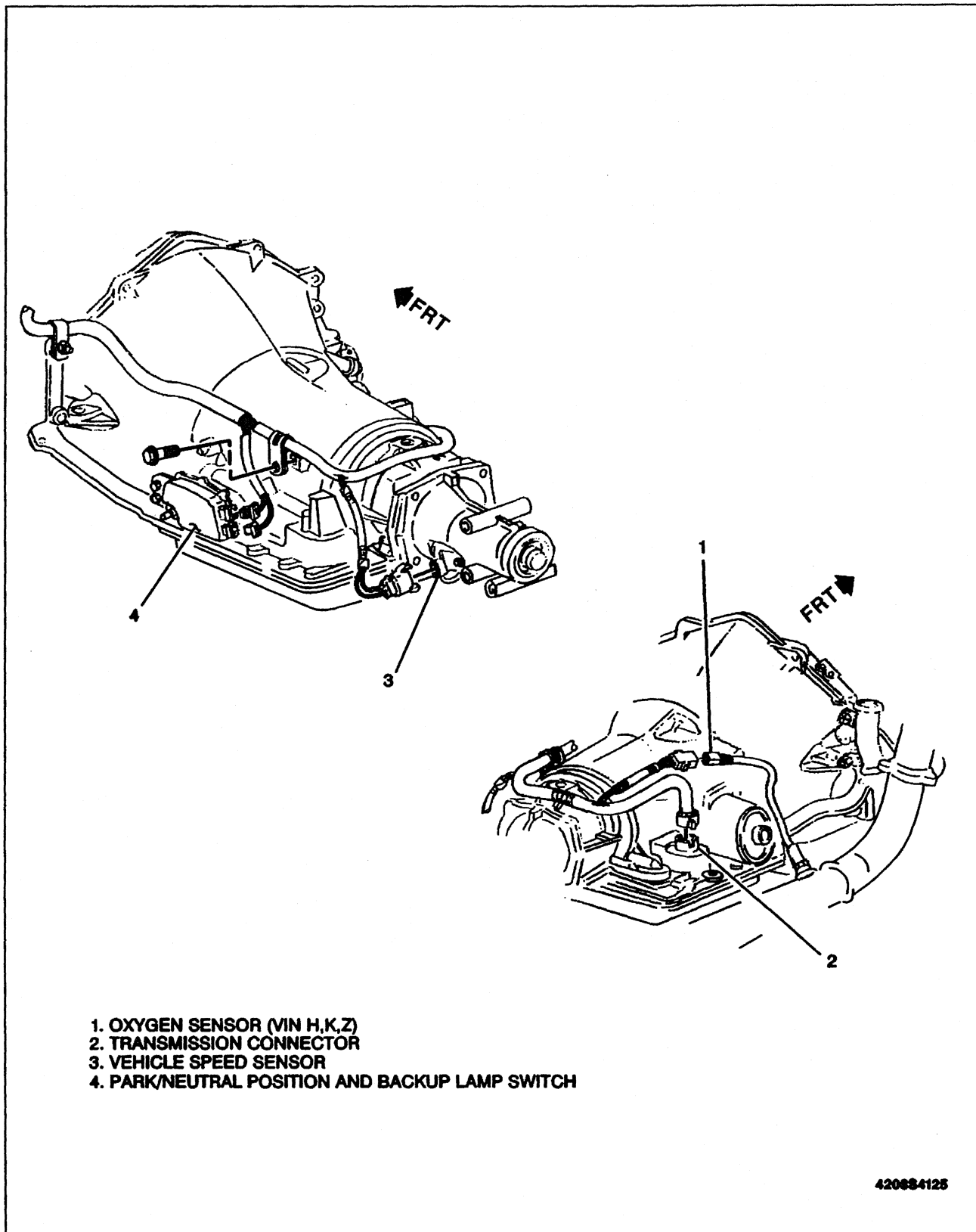
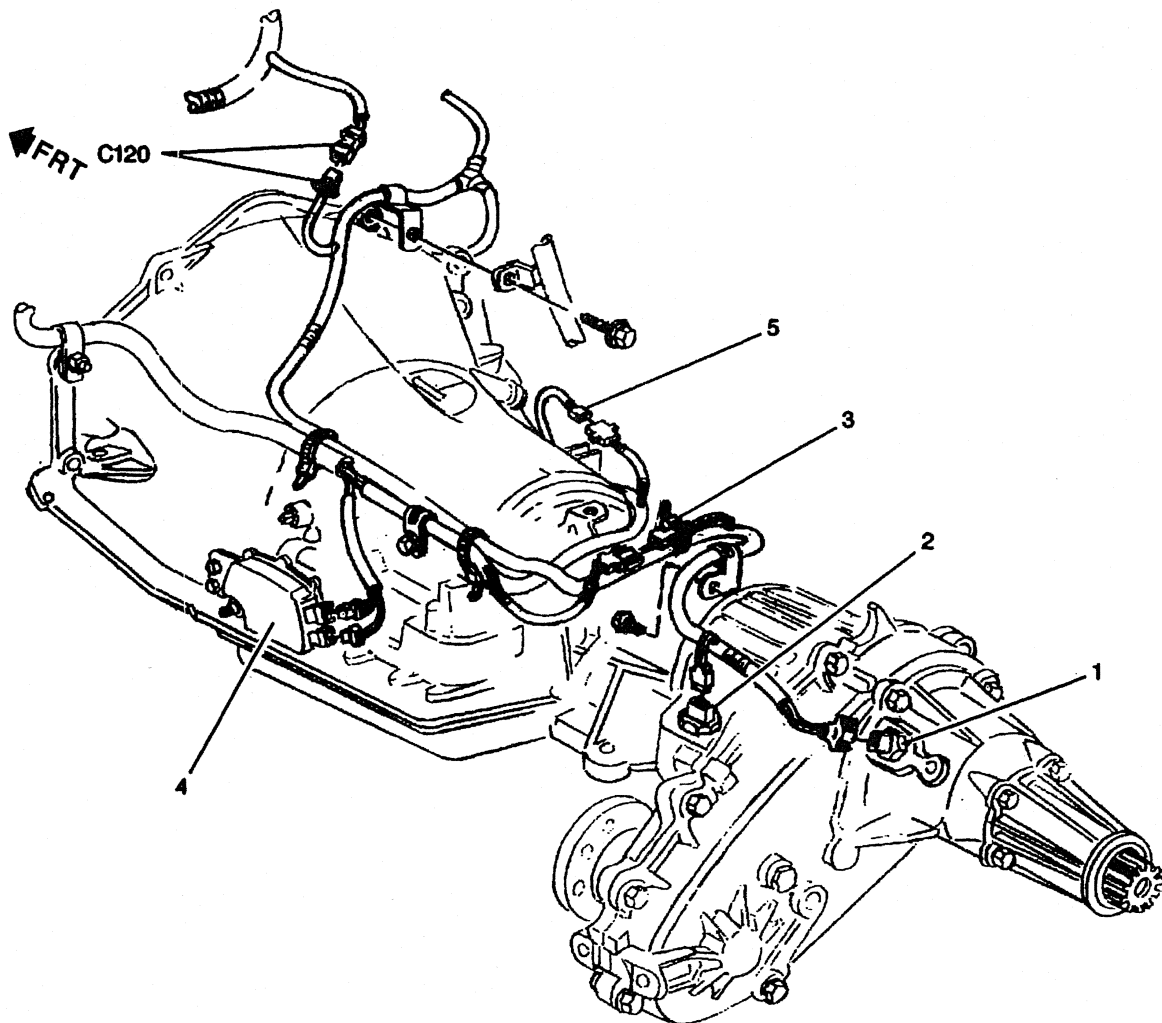


Figure 23—Electronic 4-Speed Automatic Overdrive Transmission



- 1. OUTPUT SPEED SENSOR
- 2. TRANSFER CASE SWITCH
- 3. SPEED SENSOR CONNECTOR, PART OF 4WD HARNESS
- 4. PARK / NEUTRAL POSITION AND BACKUP LAMP SWITCH
- 5. OXYGEN SENSOR CONNECTOR (VIN H, K, 2)

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420835245

Figure 24—Electronic 4-Speed Automatic Overdrive Transmission W/4WD

COMPONENT LOCATION VIEWS

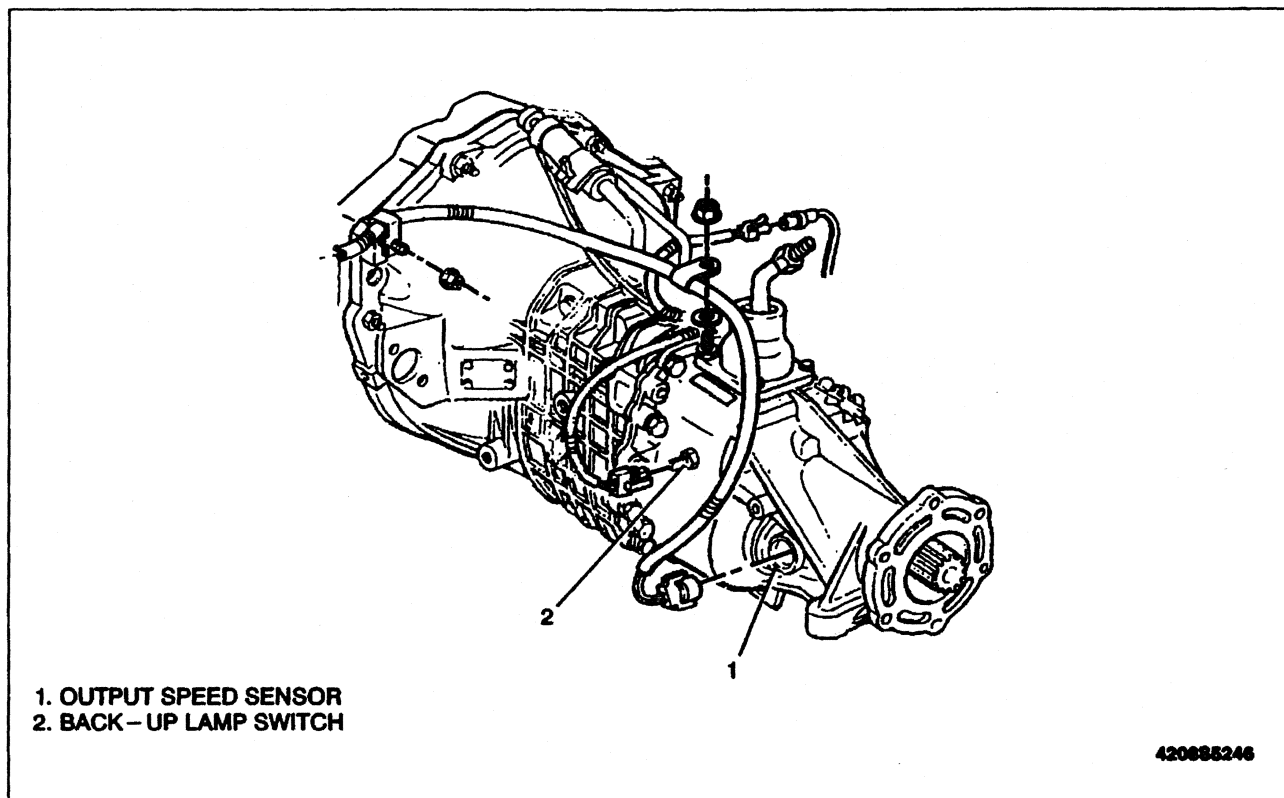


Figure 25—HD 5-Speed Manual Transmission

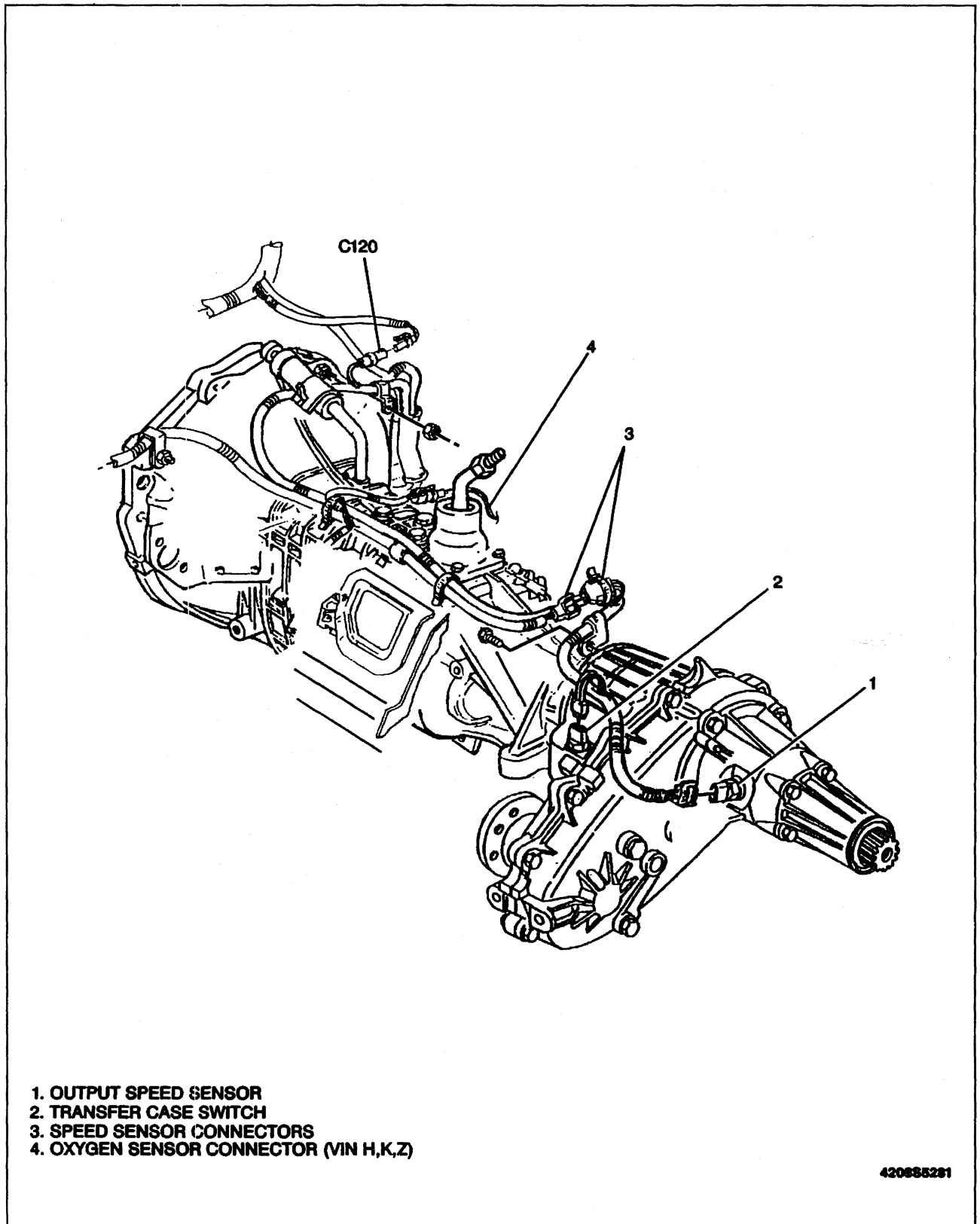


Figure 26—HD 5-Speed Manual Transmission W/4WD

COMPONENT LOCATION VIEWS

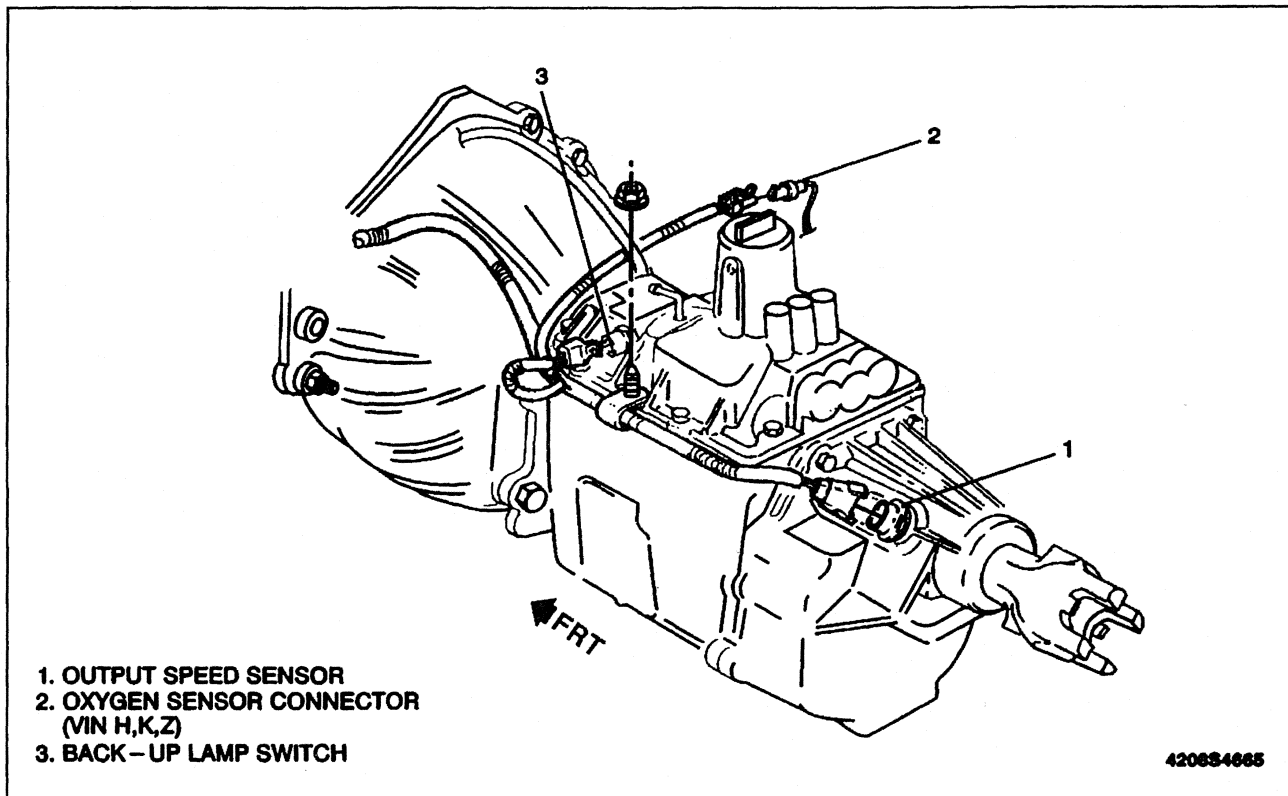


Figure 27—5-Speed Manual Transmission

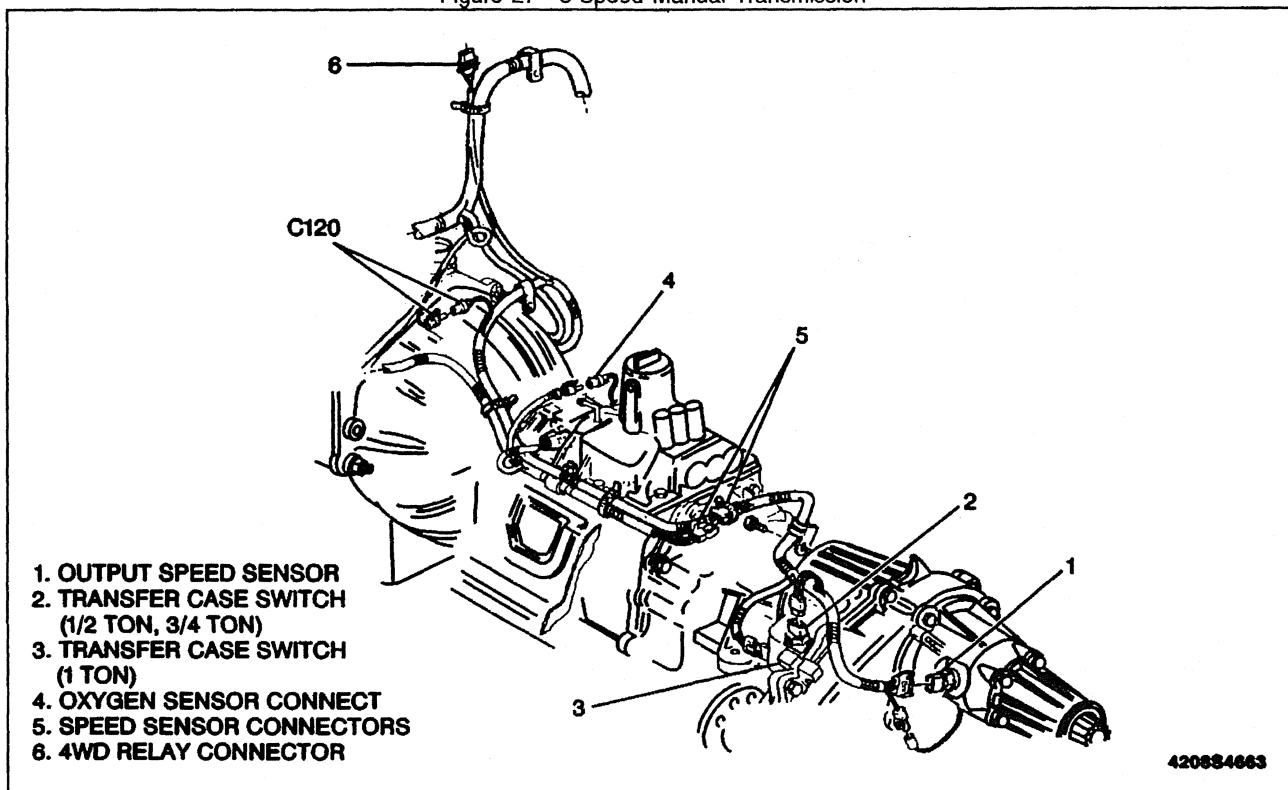


Figure 28—5-Speed Manual Transmission W/4WD

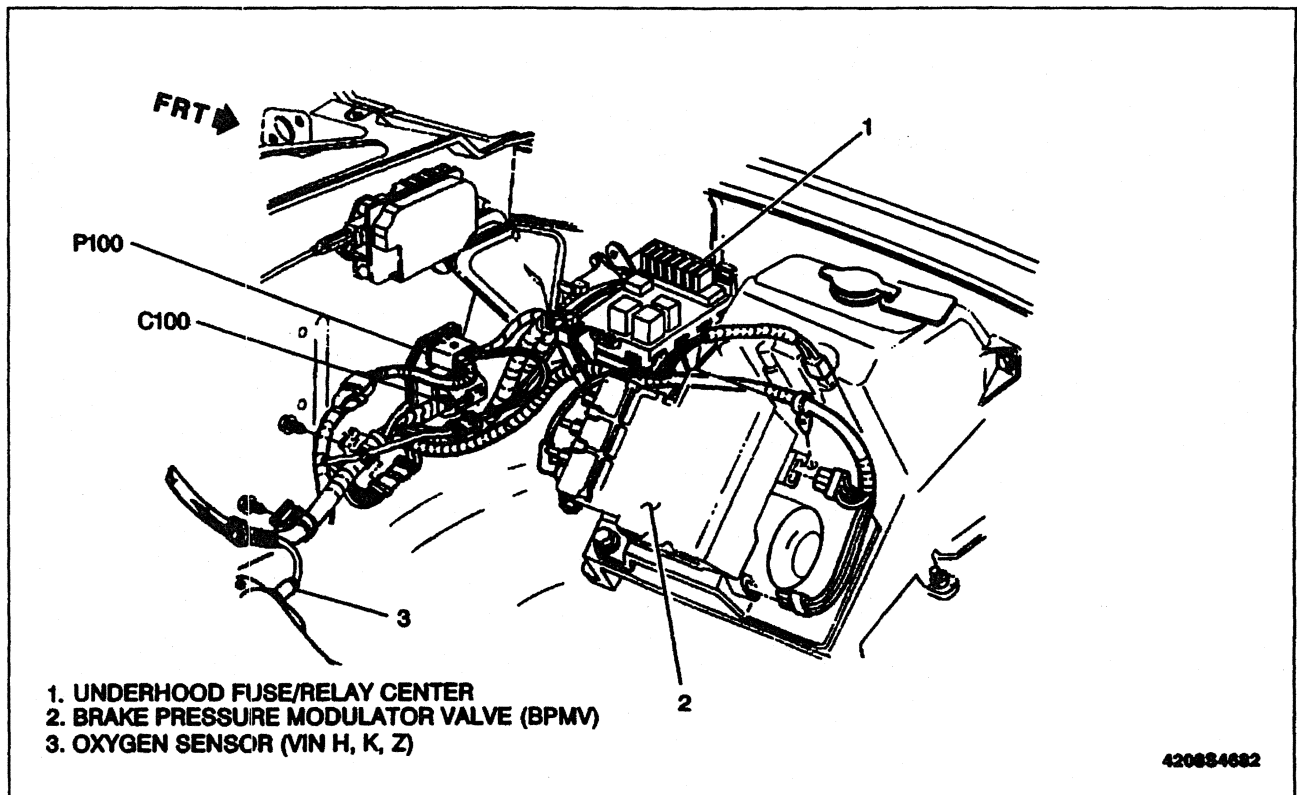


Figure 29—Brake Pressure Modulator Valve

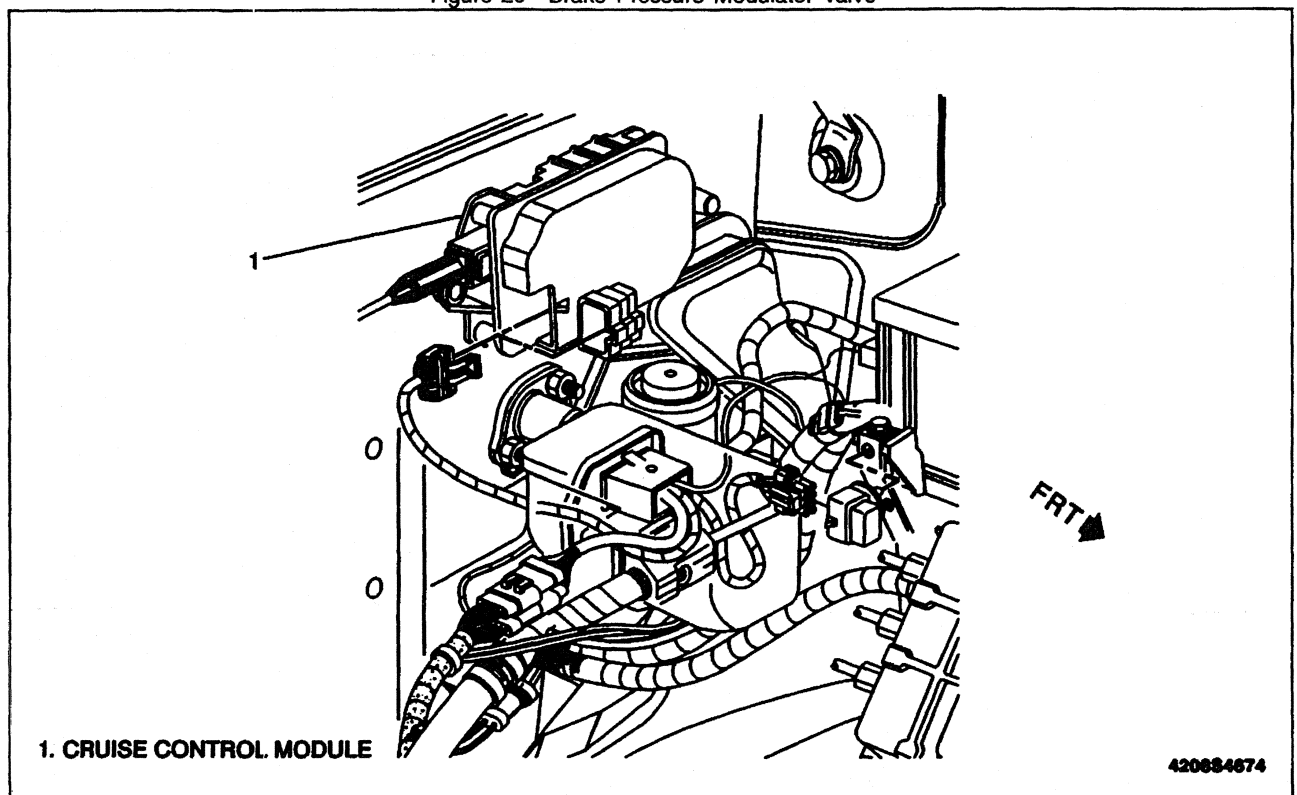


Figure 30—Cruise Control Module

COMPONENT LOCATION VIEWS

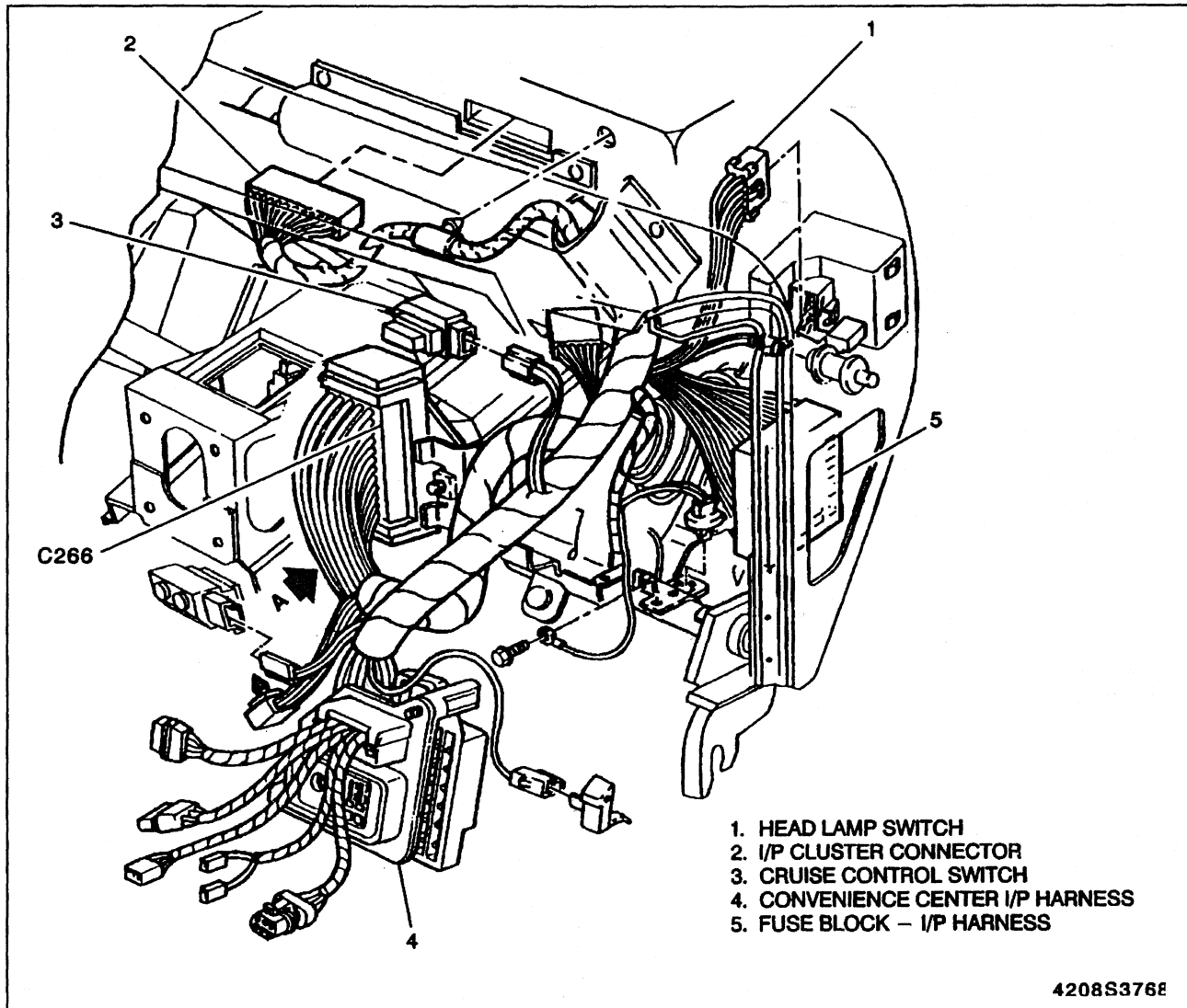


Figure 31—Instrument Panel Wiring, LH Side

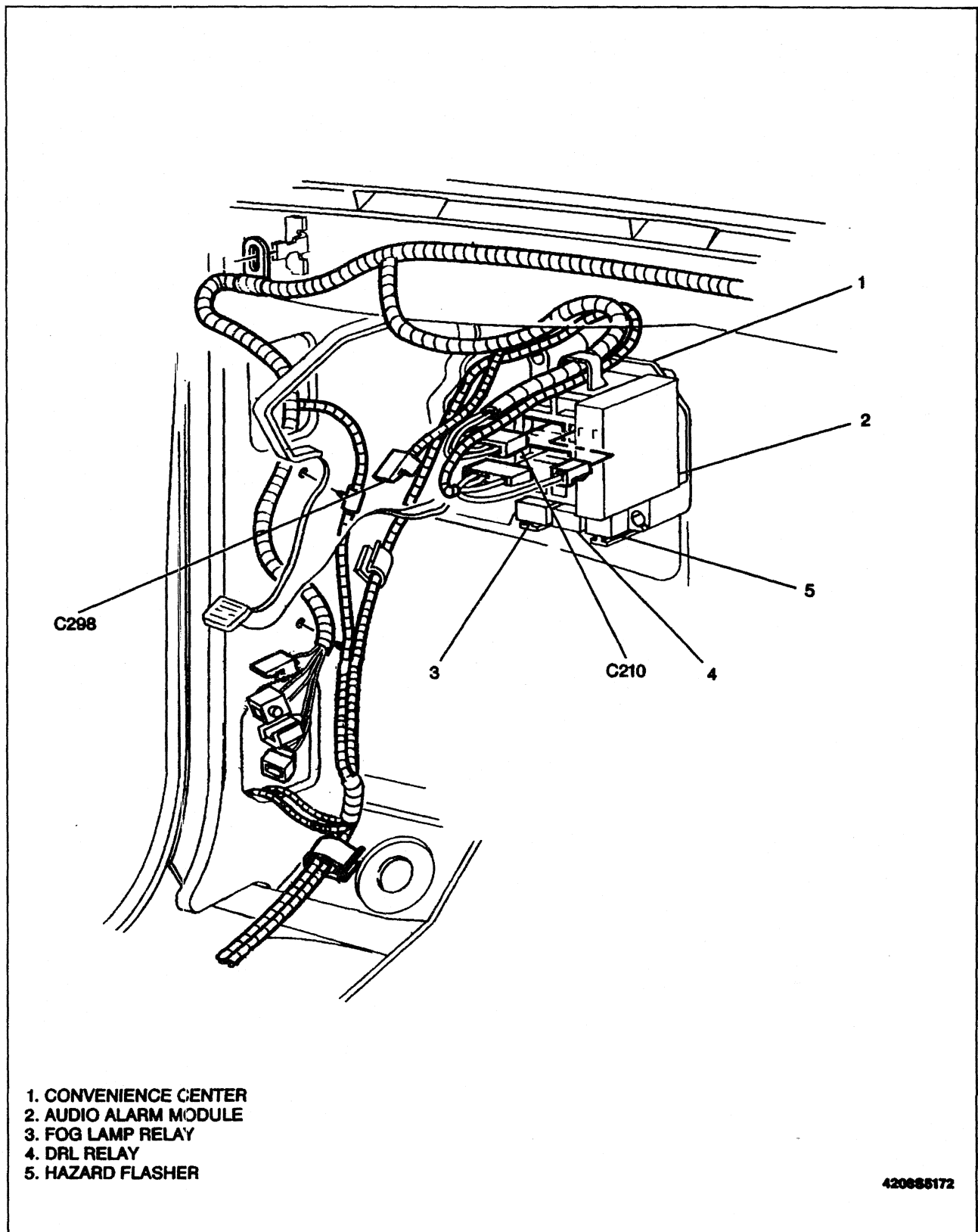


Figure 32—Convenience Center

COMPONENT LOCATION VIEWS

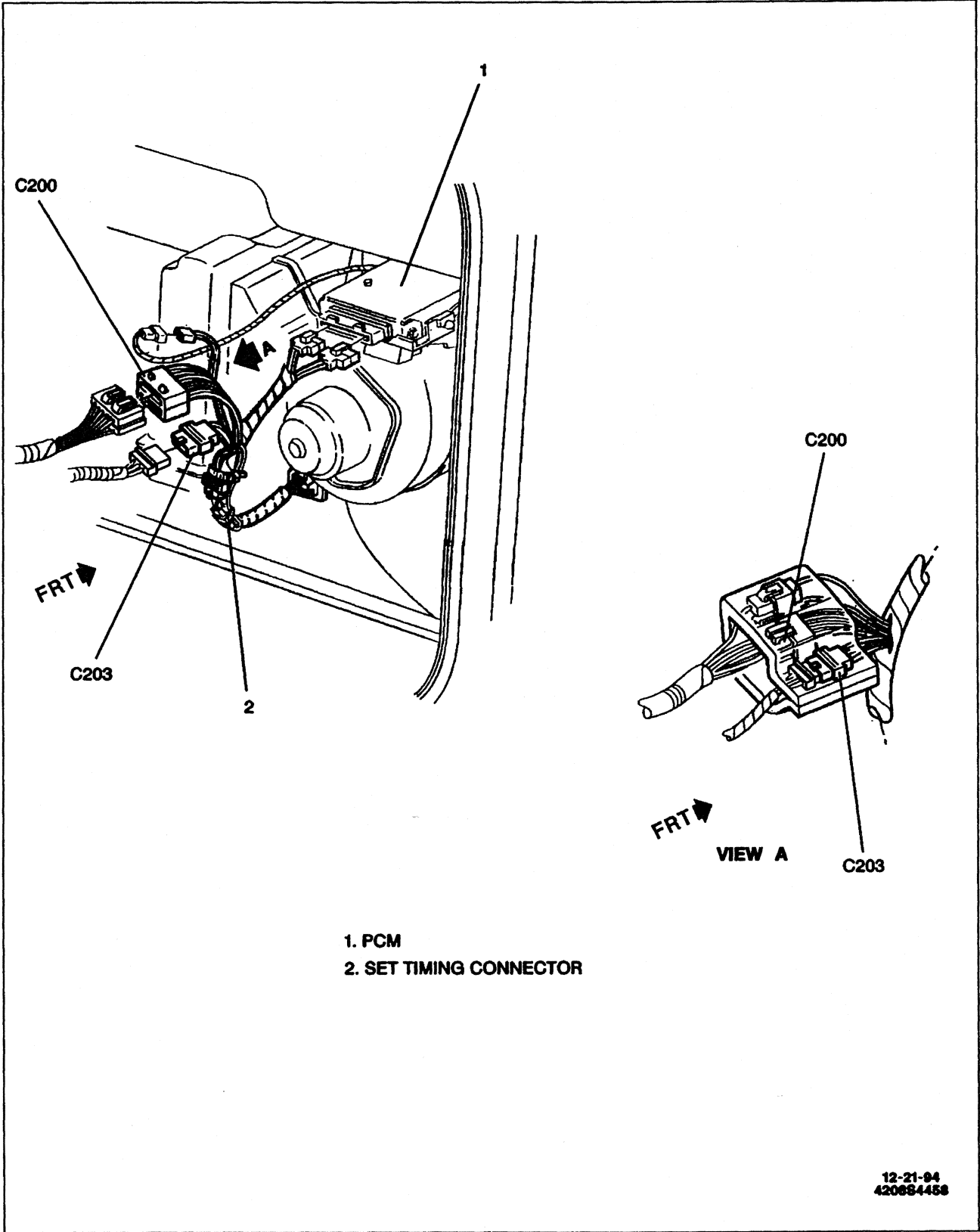


Figure 33—Powertrain Control Module (PCM) Gasoline

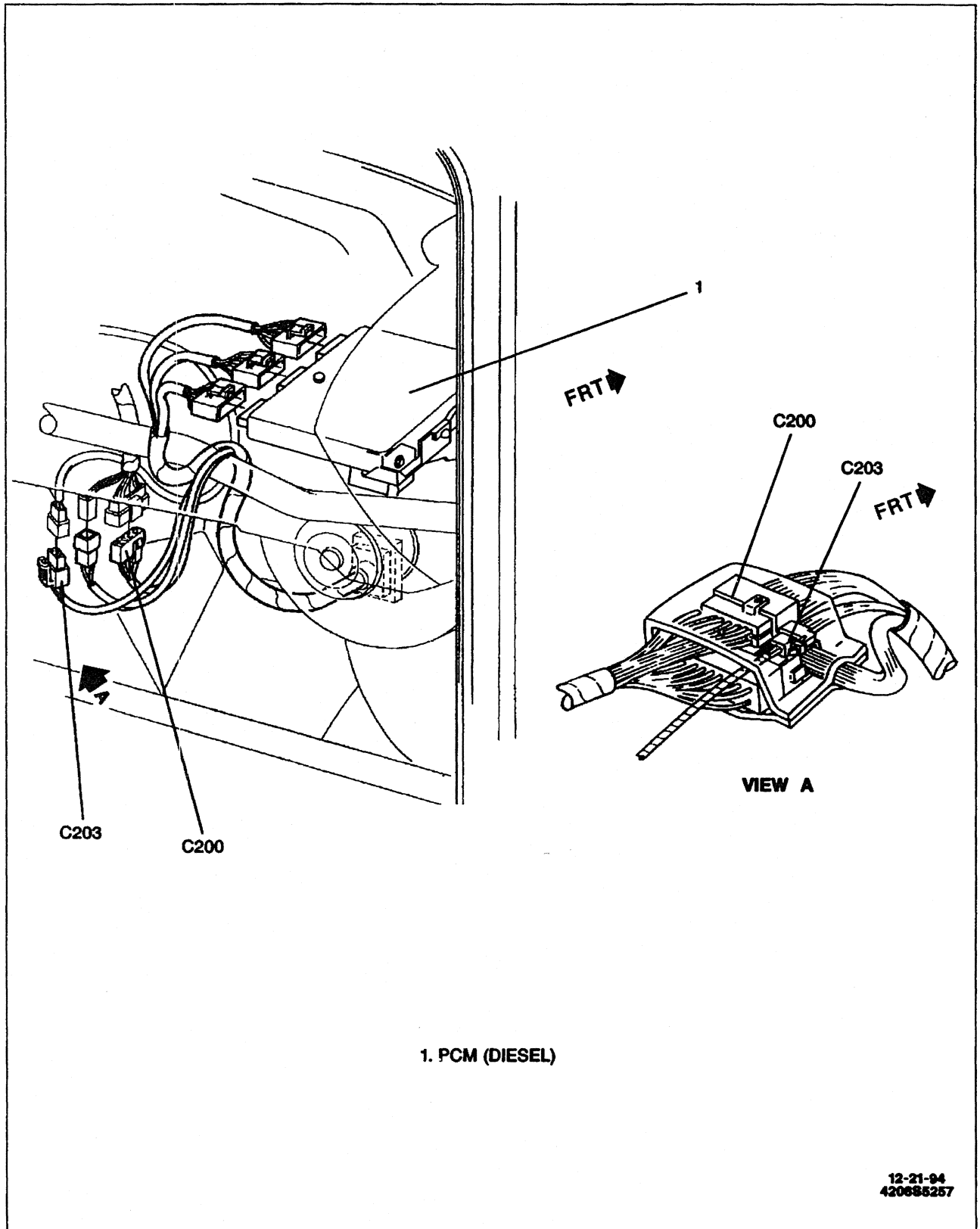


Figure 34—Powertrain Control Module (PCM) Diesel

COMPONENT LOCATION VIEWS

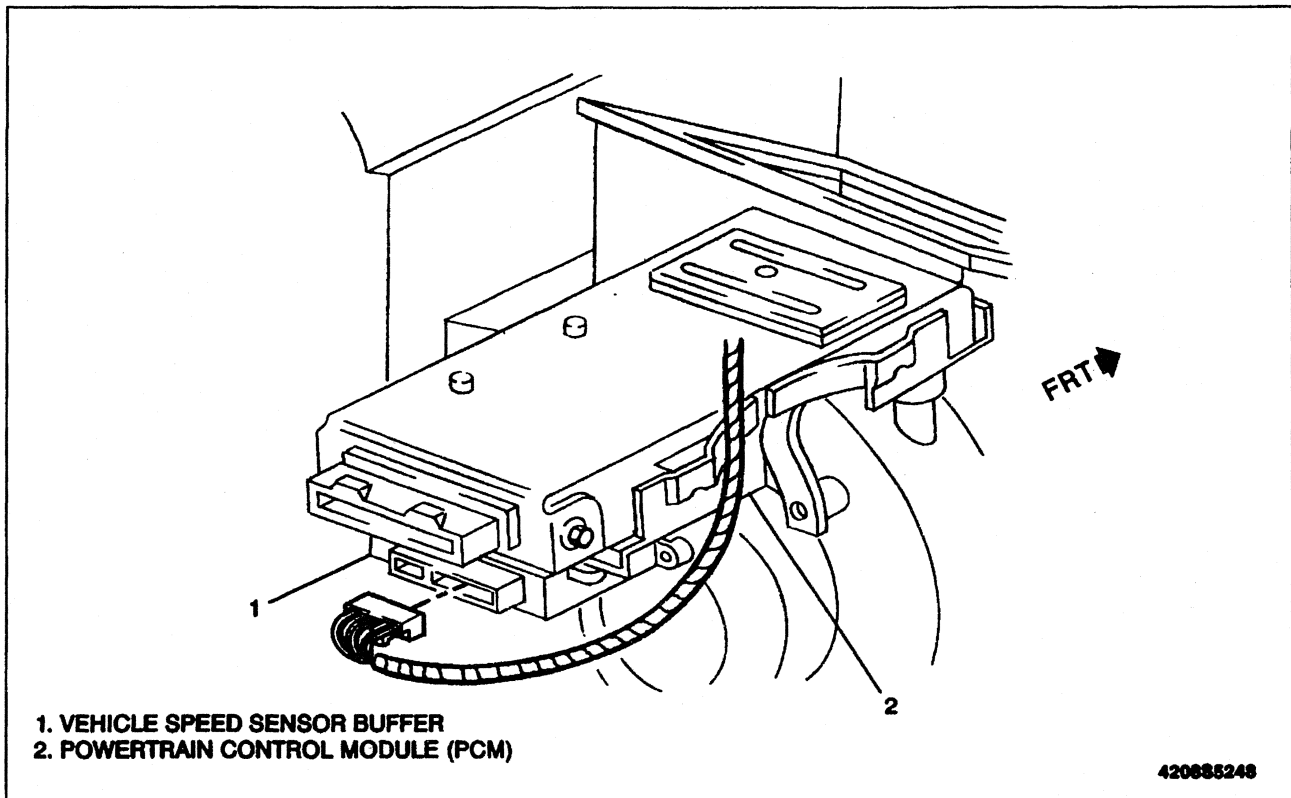


Figure 35—Vehicle Speed Sensor Buffer

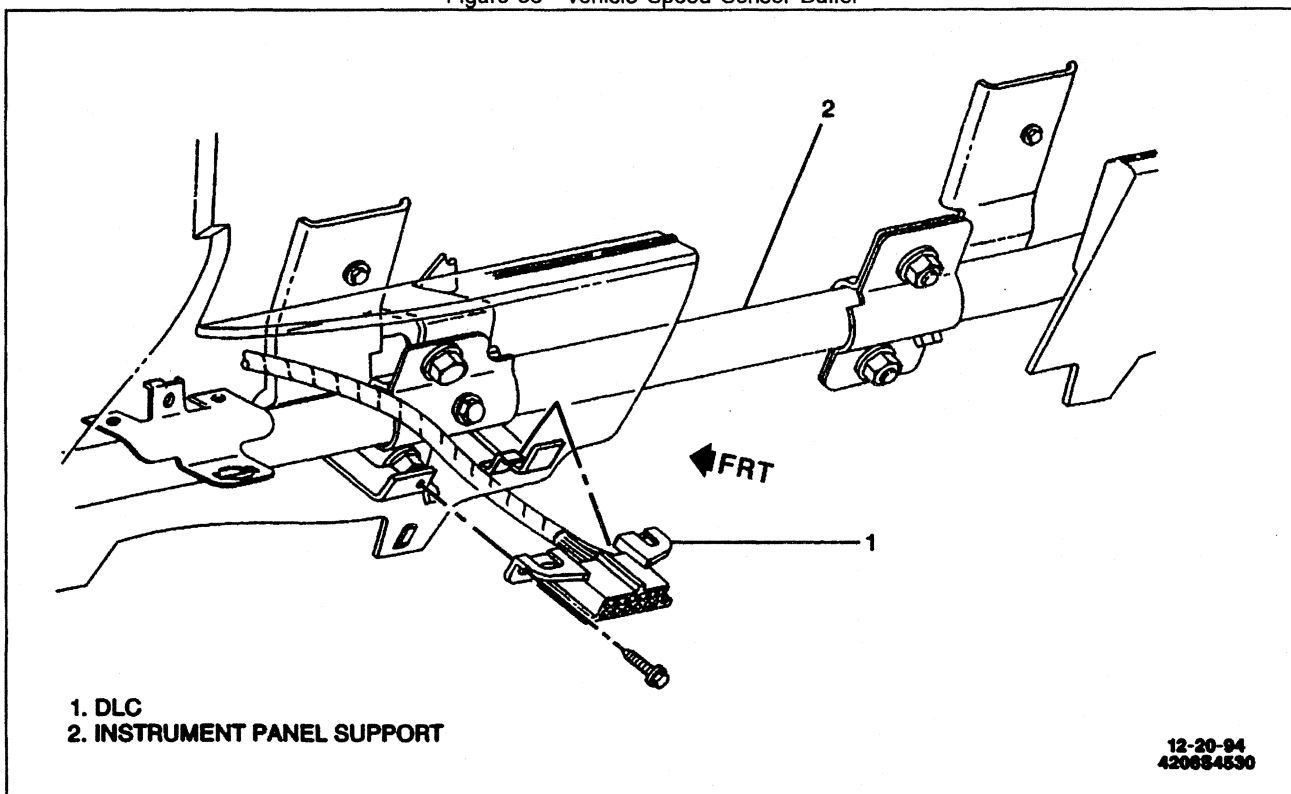


Figure 36—Data Link Connector (DLC)

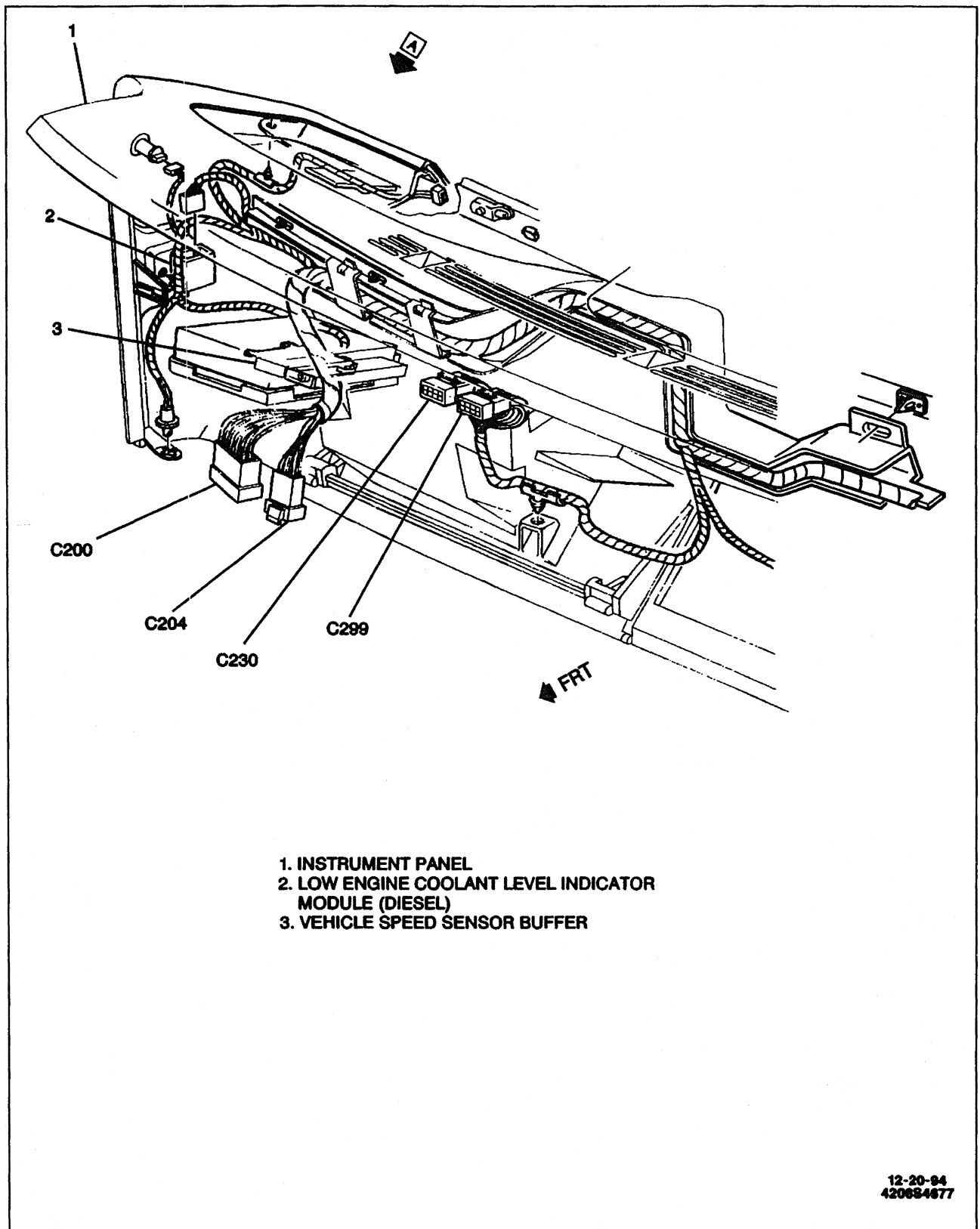
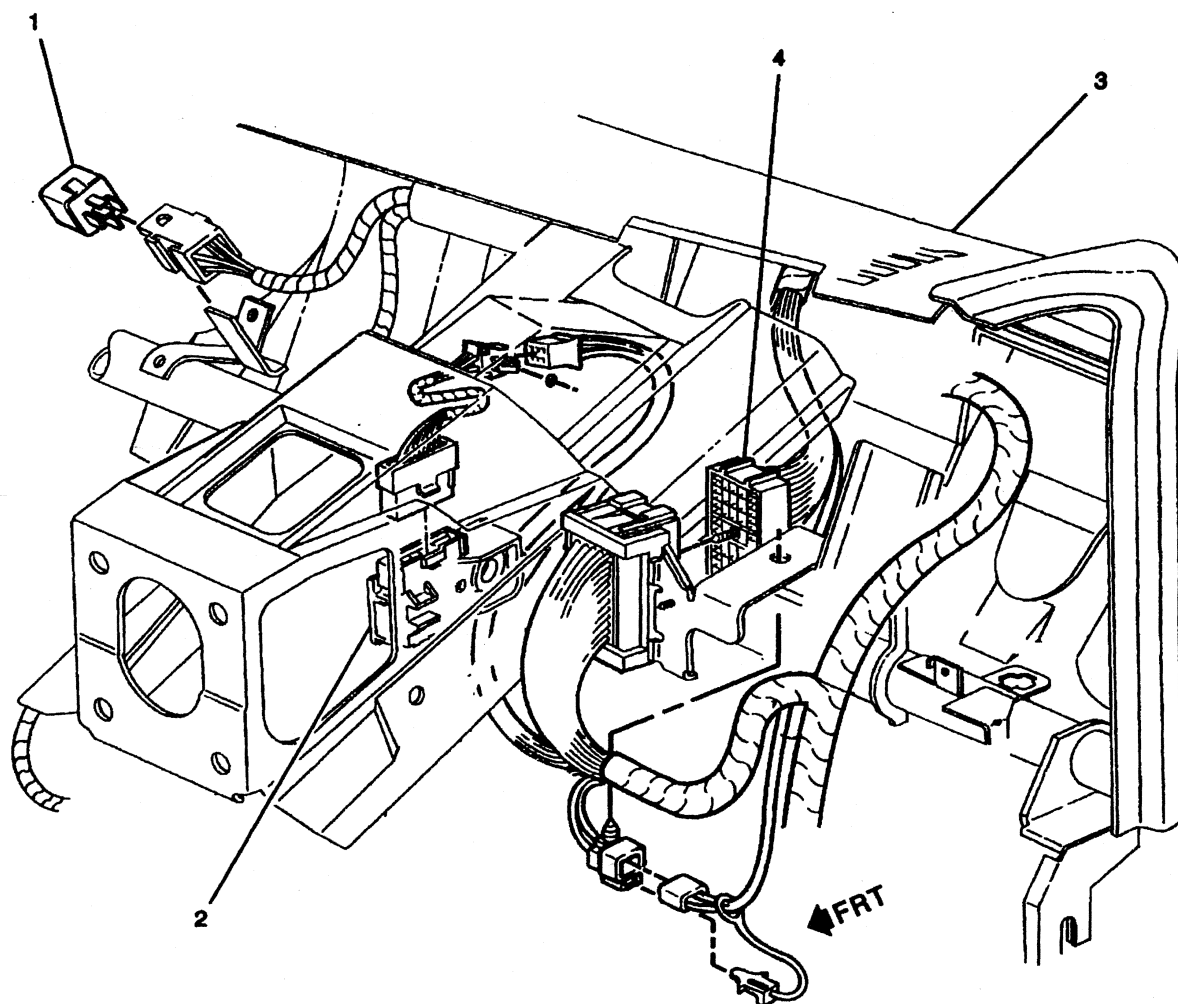


Figure 37—Instrument* Panel Wiring, RH Side

COMPONENT LOCATION VIEWS



- 1. TURN SIGNAL FLASHER
- 2. TCC/STOPLAMP SWITCH
- 3. INSTRUMENT PANEL
- 4. STEERING COLUMN
CONNECTOR C266

420084567

Figure 38—Instrument Panel Wiring, LH Side

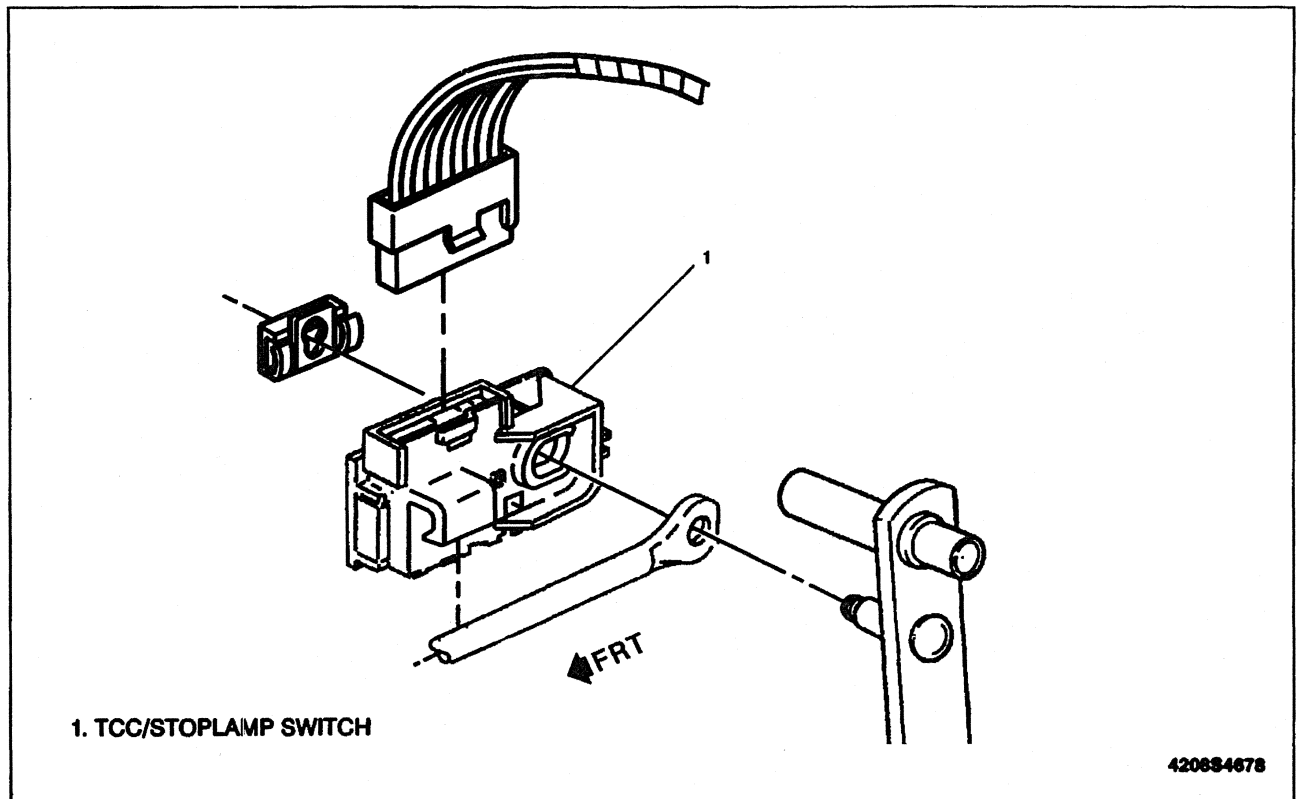


Figure 39—TCC/Stoplamp Switch Wiring

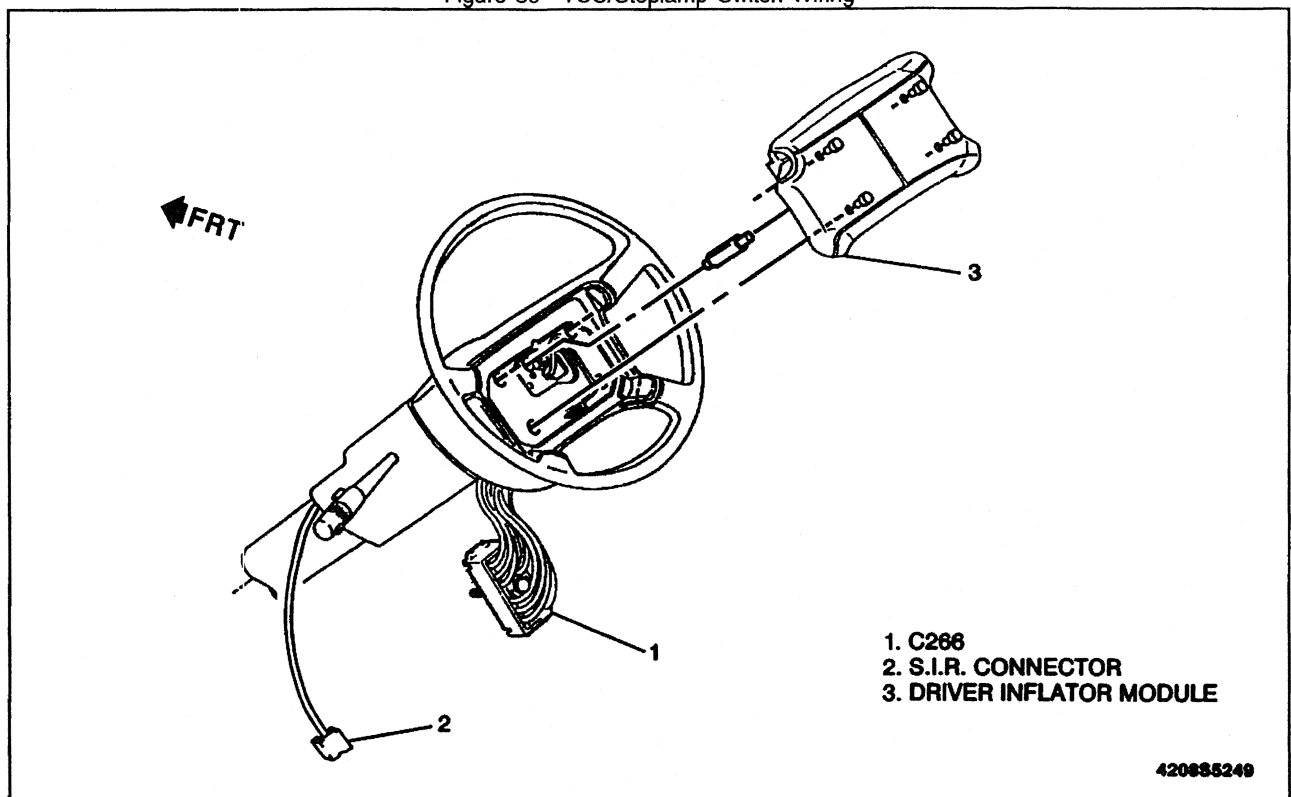


Figure 40—Steering Column Wiring

COMPONENT LOCATION VIEWS

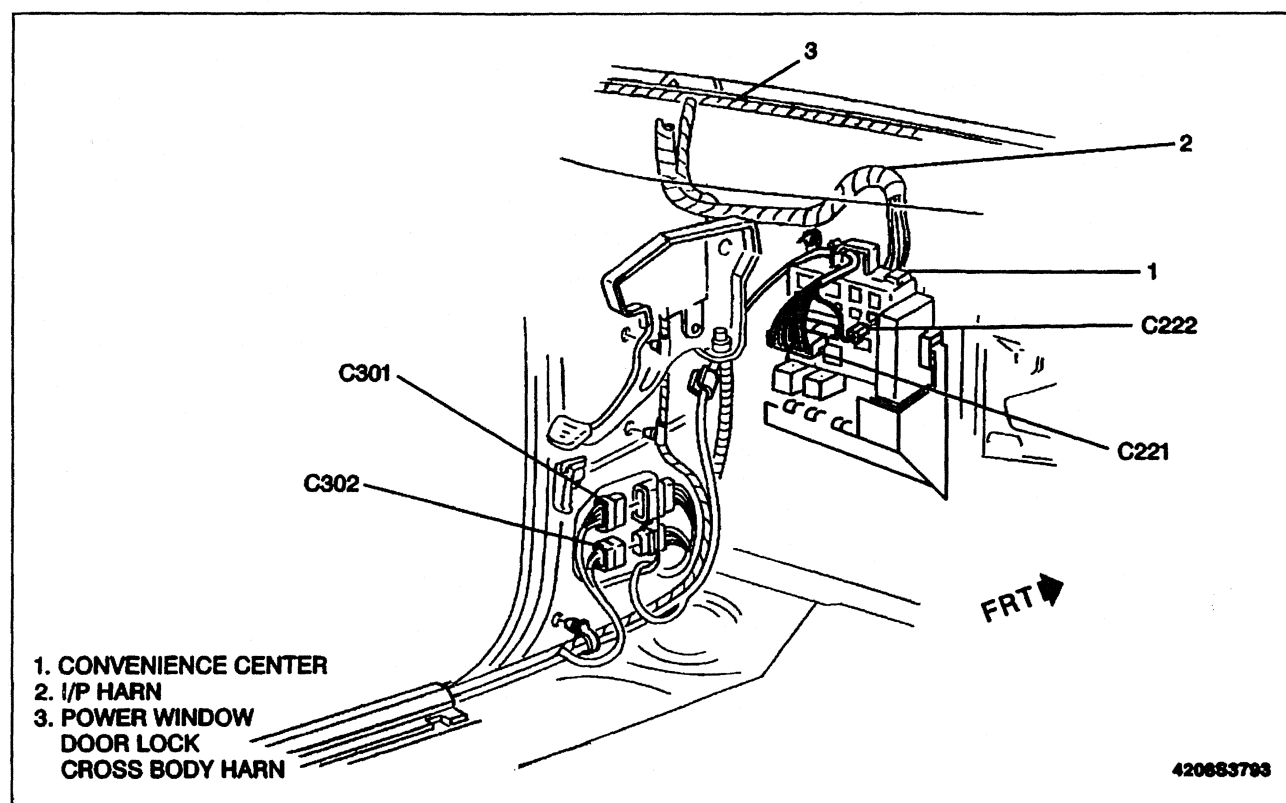


Figure 41—LH A-Pillar Wiring

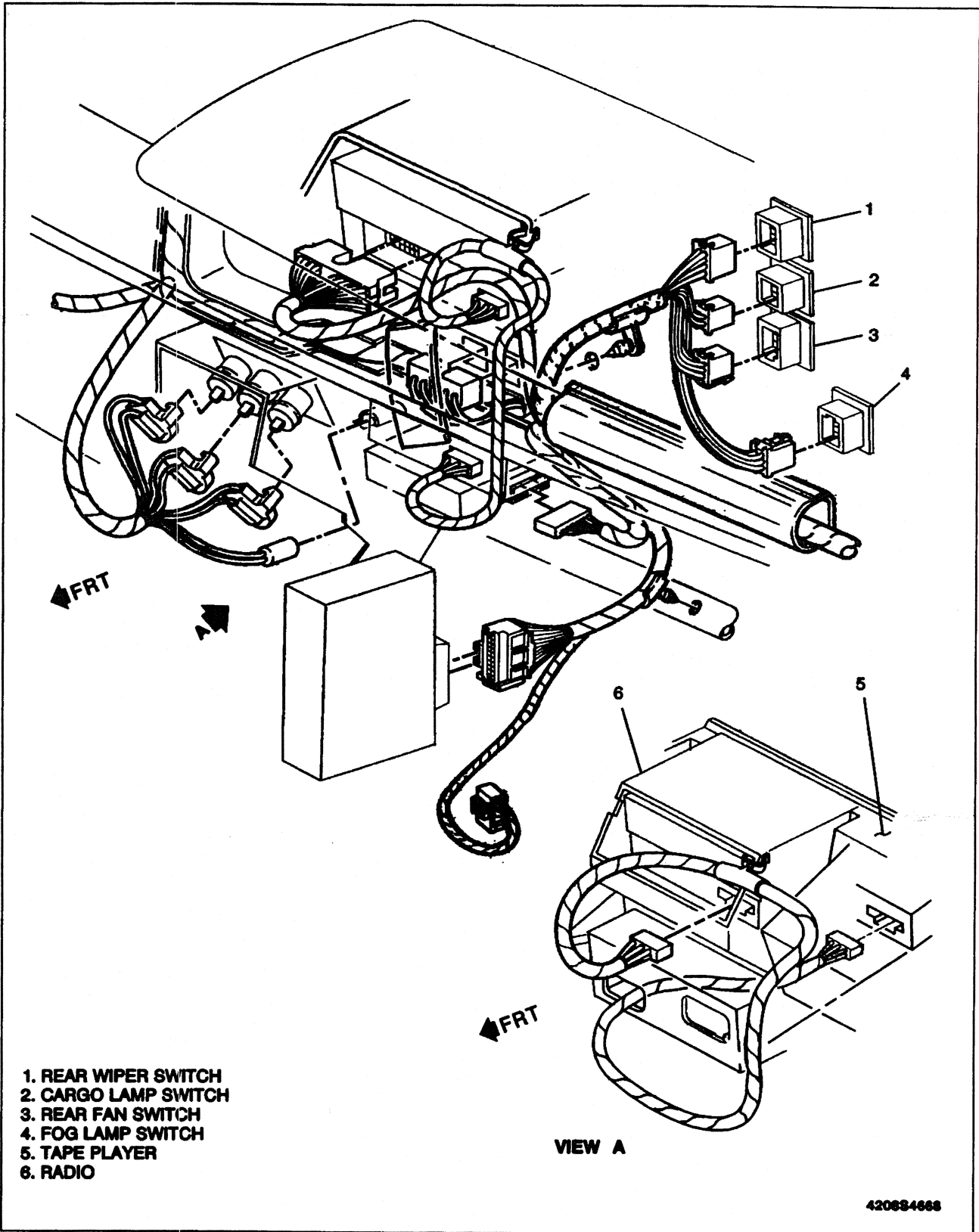


Figure 42—Cargo Lamp Switch Wiring

COMPONENT LOCATION VIEWS

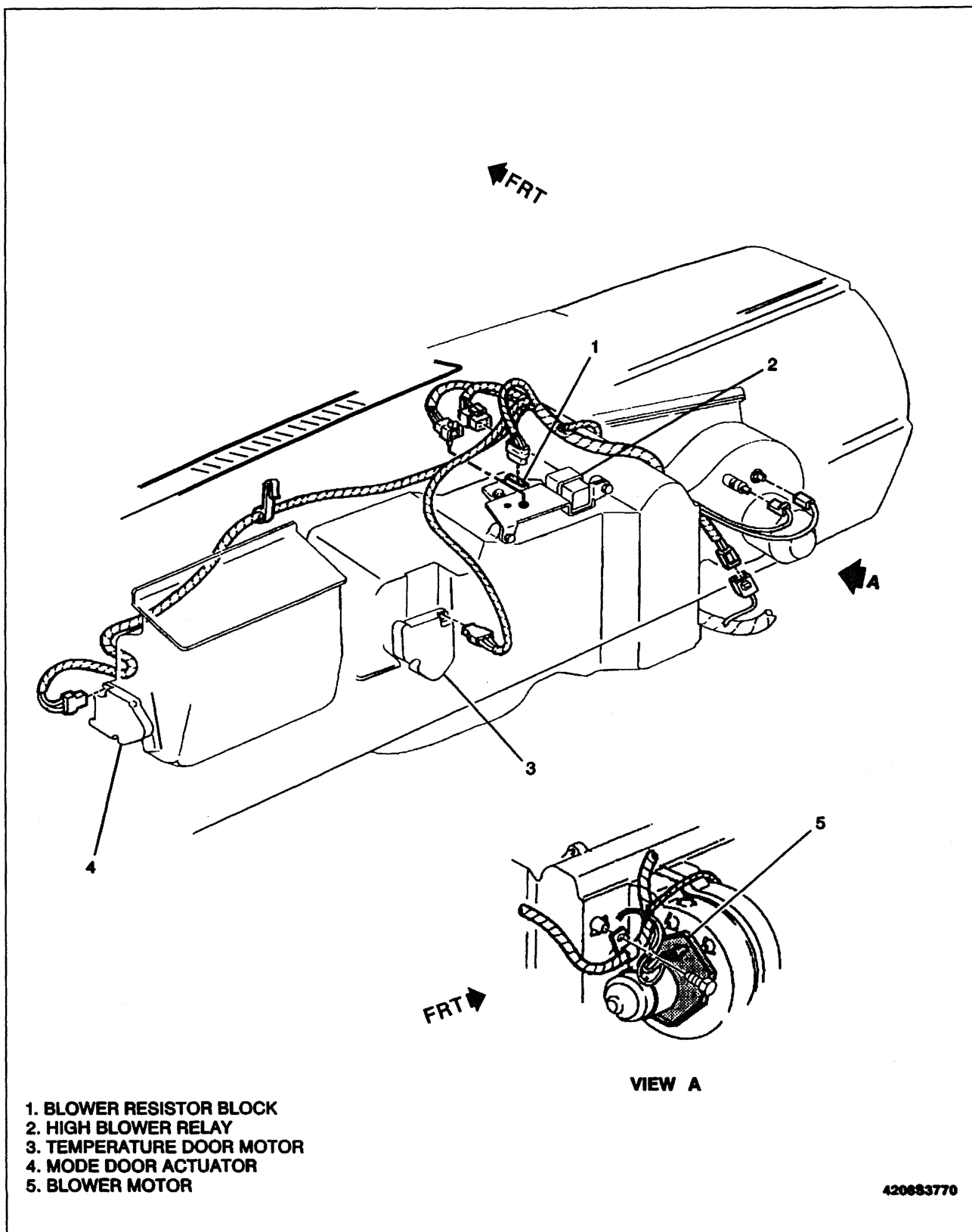
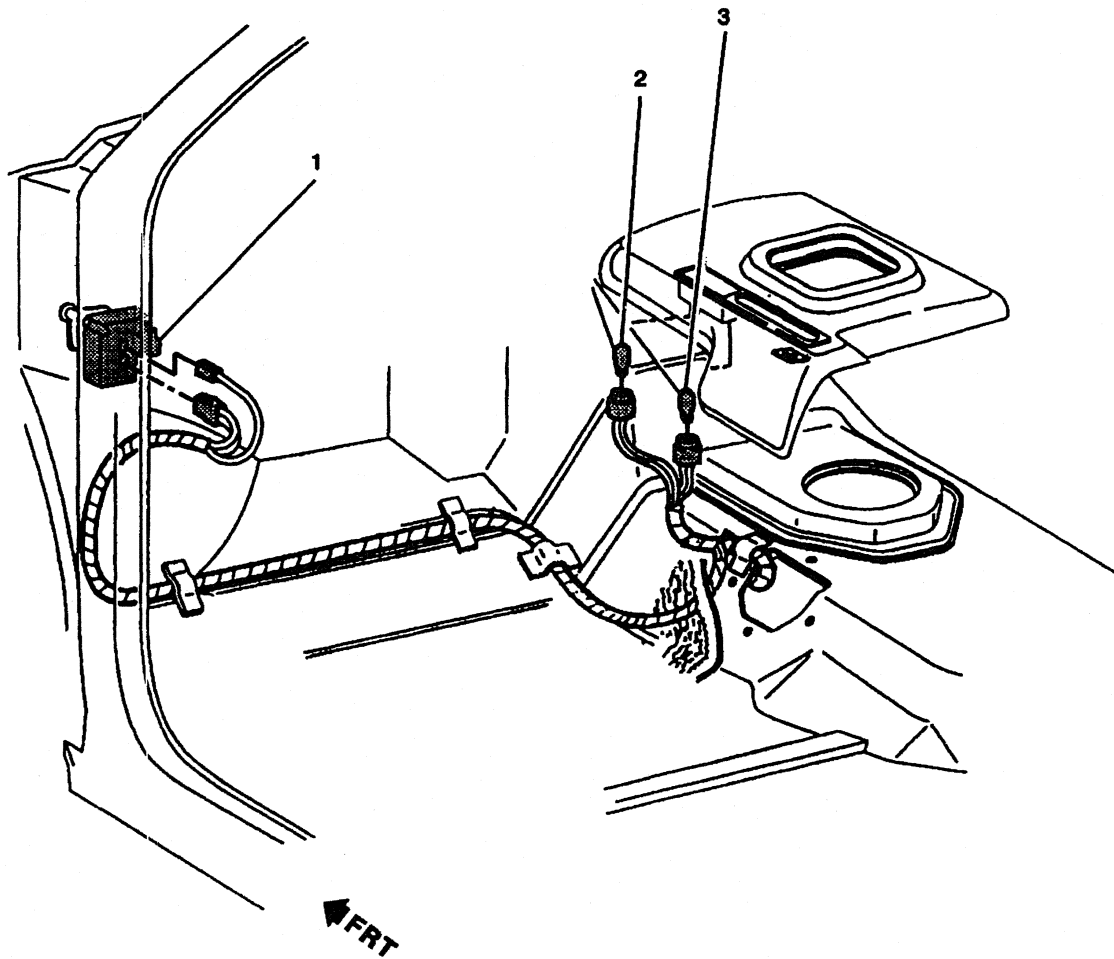


Figure 43—Heater and Air Conditioning Wiring

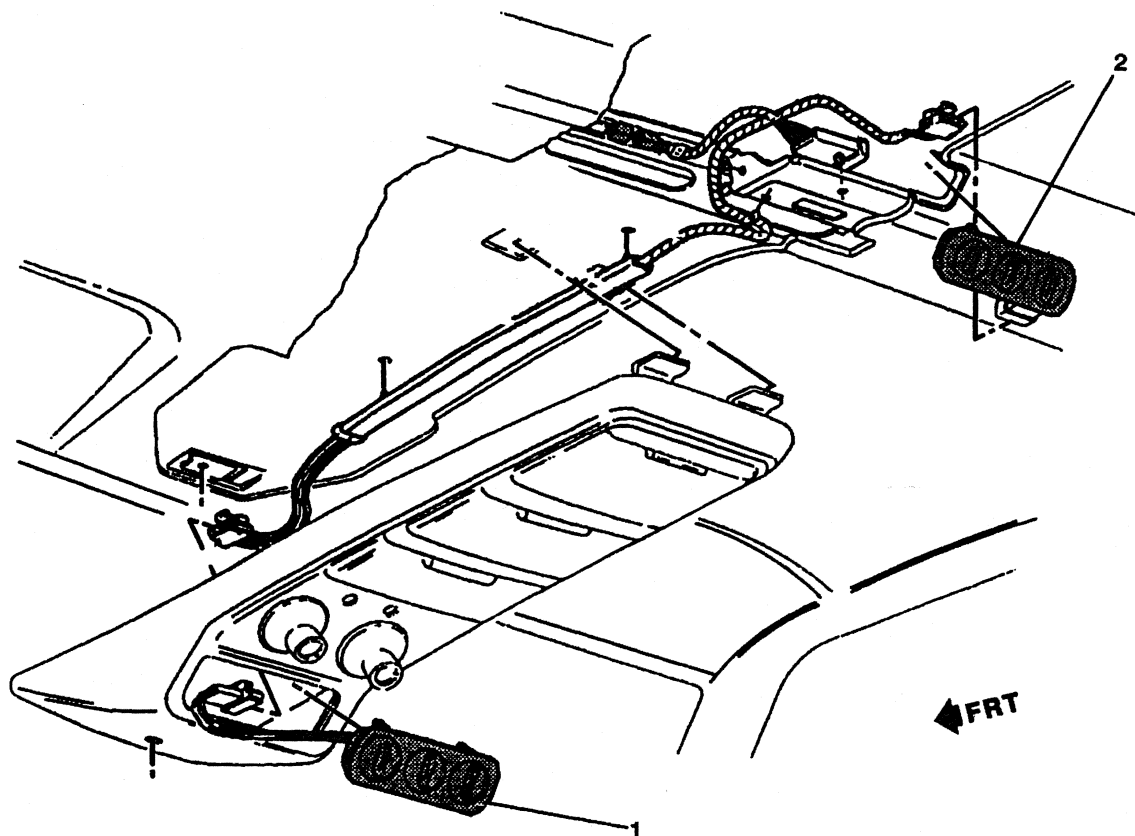


- 1. CONVENIENCE CENTER
- 2. FOUR - WHEEL DRIVE INDICATOR LAMP
- 3. TRANSFER CASE SHIFT ILLUMINATION LAMP

420883774

Figure 44—Four-Wheel Indicator Wiring

COMPONENT LOCATION VIEWS



- 1. AUXILIARY HEATER AND A/C FRONT CONTROL
- 2. AUXILIARY HEATER AND A/C REAR CONTROL

420683778

Figure 45—Auxiliary Heater and Air Conditioning Controls

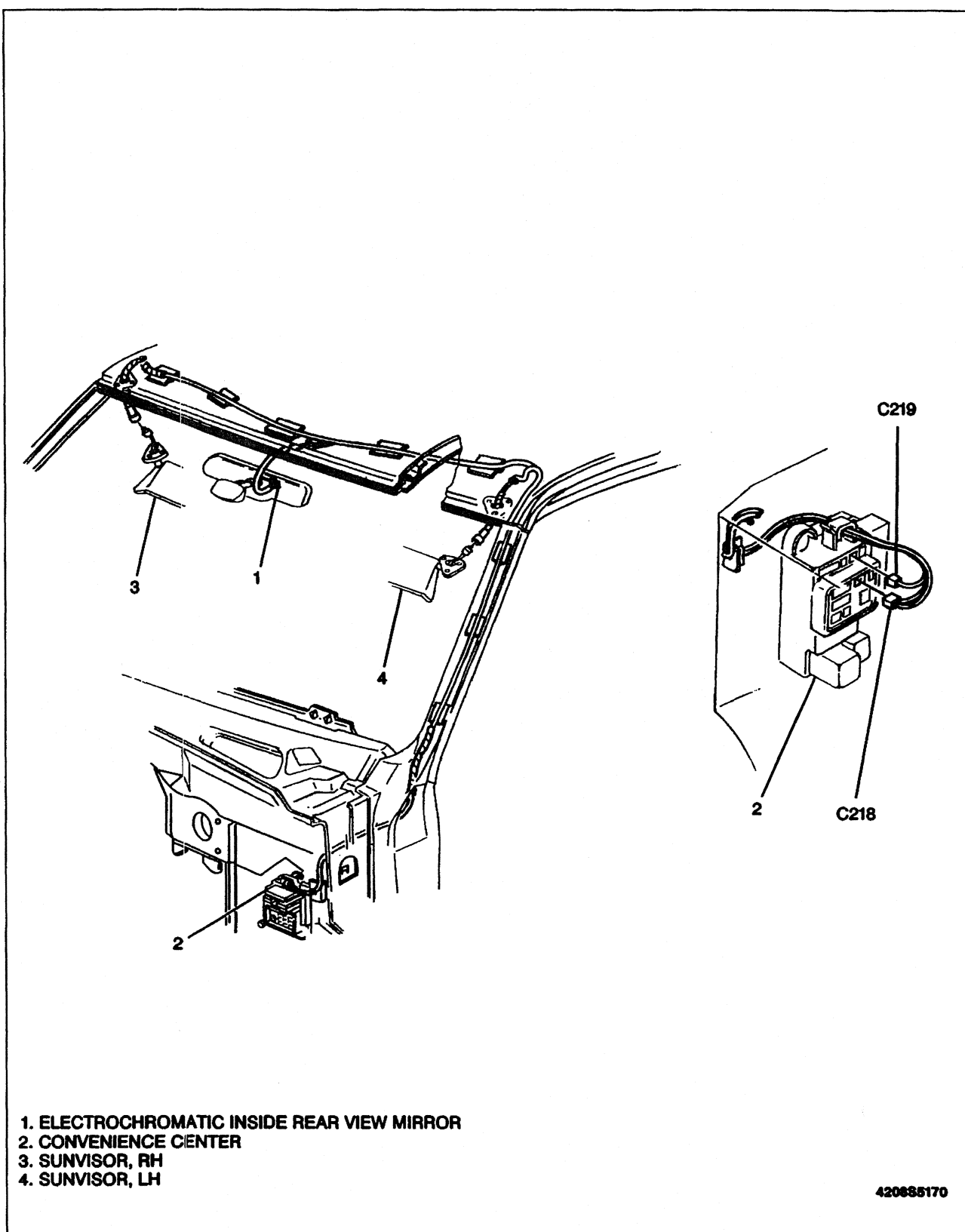


Figure 46—Electrochromatic Inside Rearview Mirror with Compass

COMPONENT LOCATION VIEWS

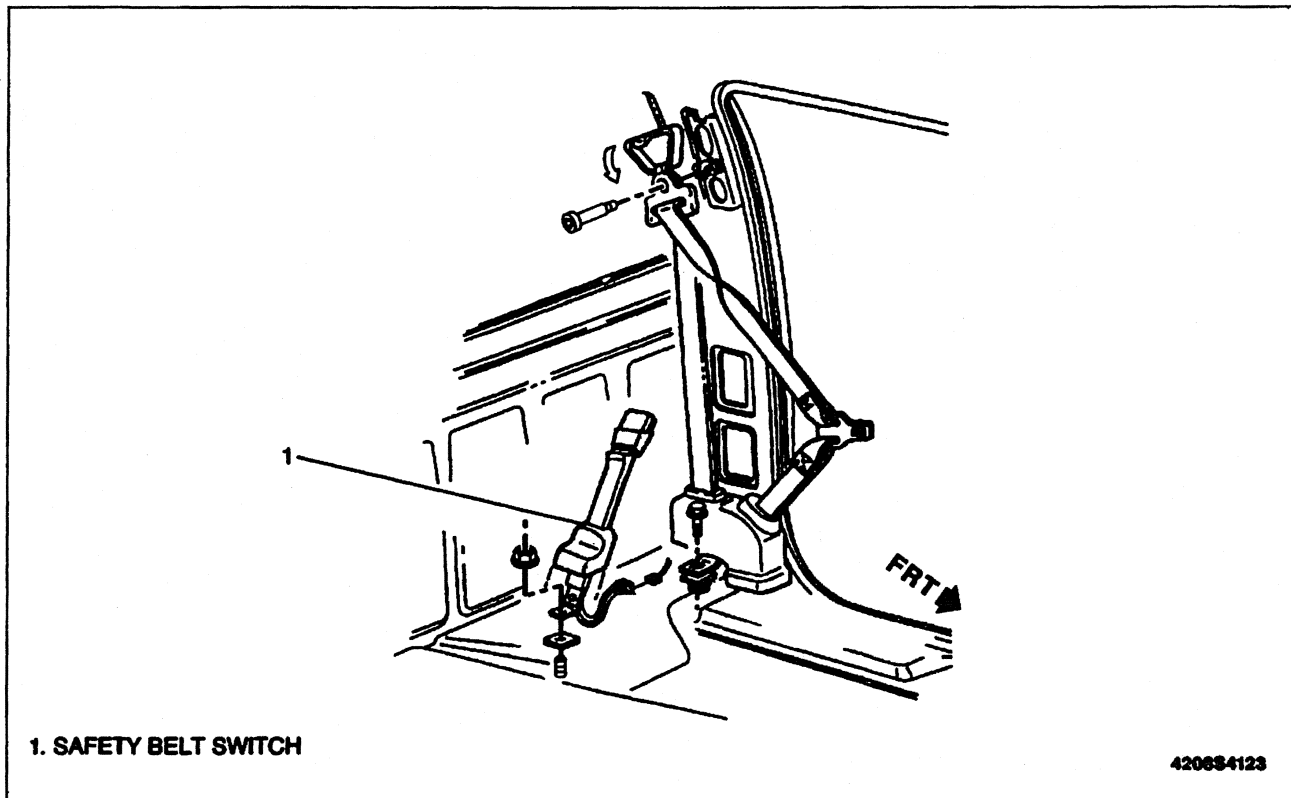


Figure 47—Safety Belt Switch Wiring

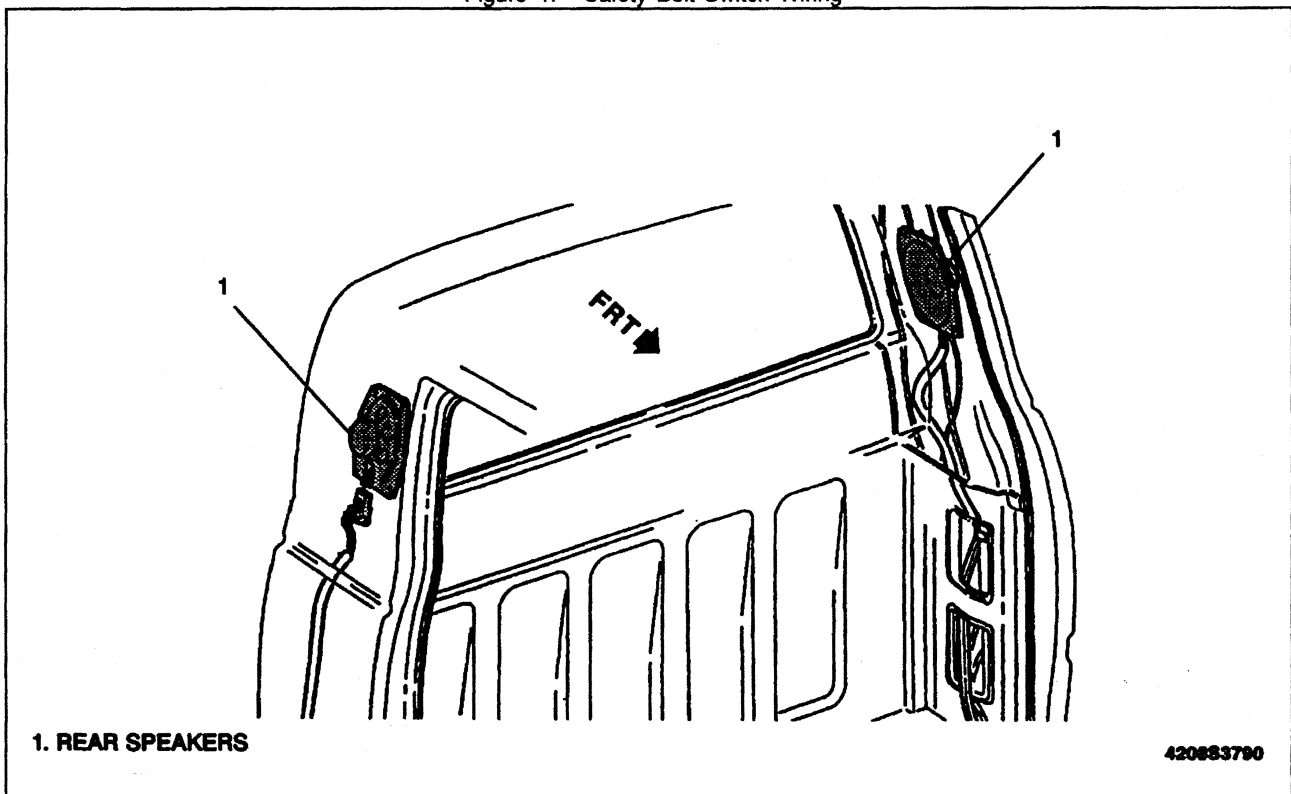


Figure 48—Rear Speakers

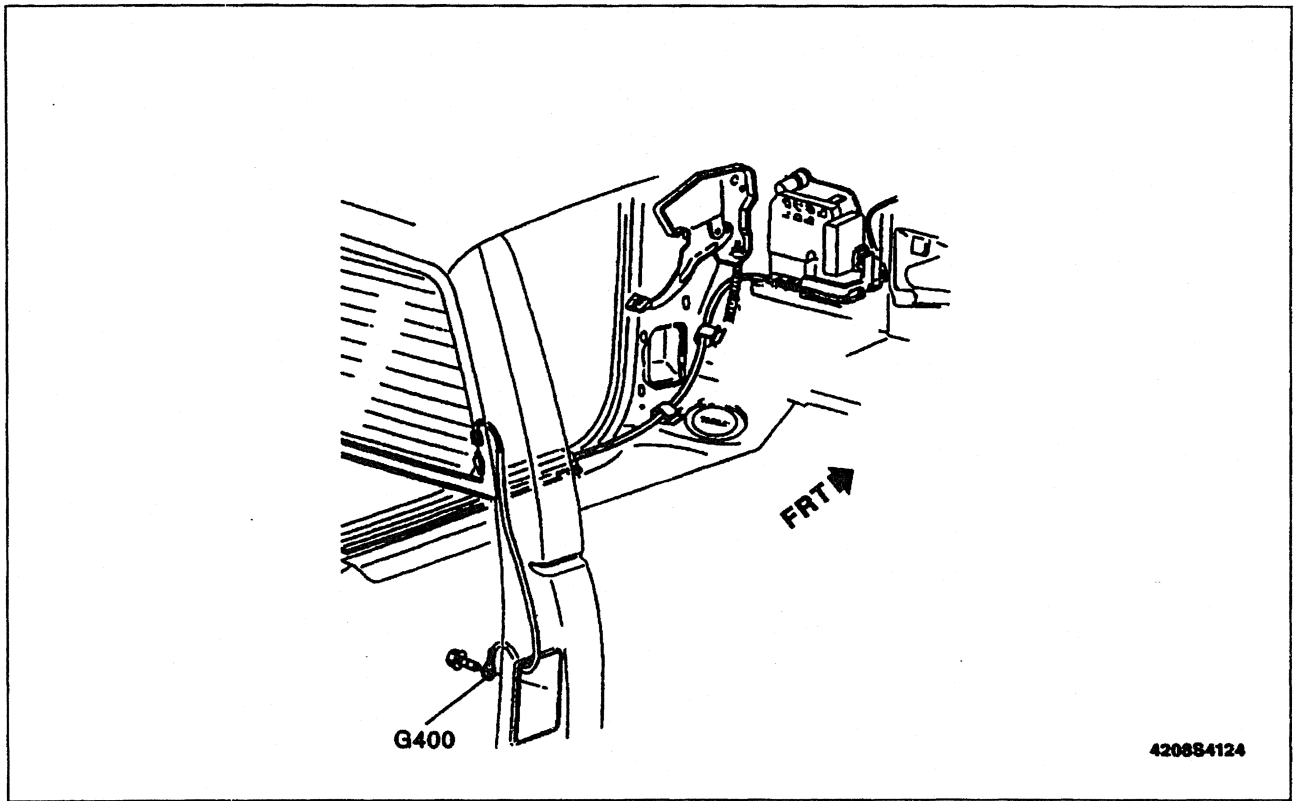
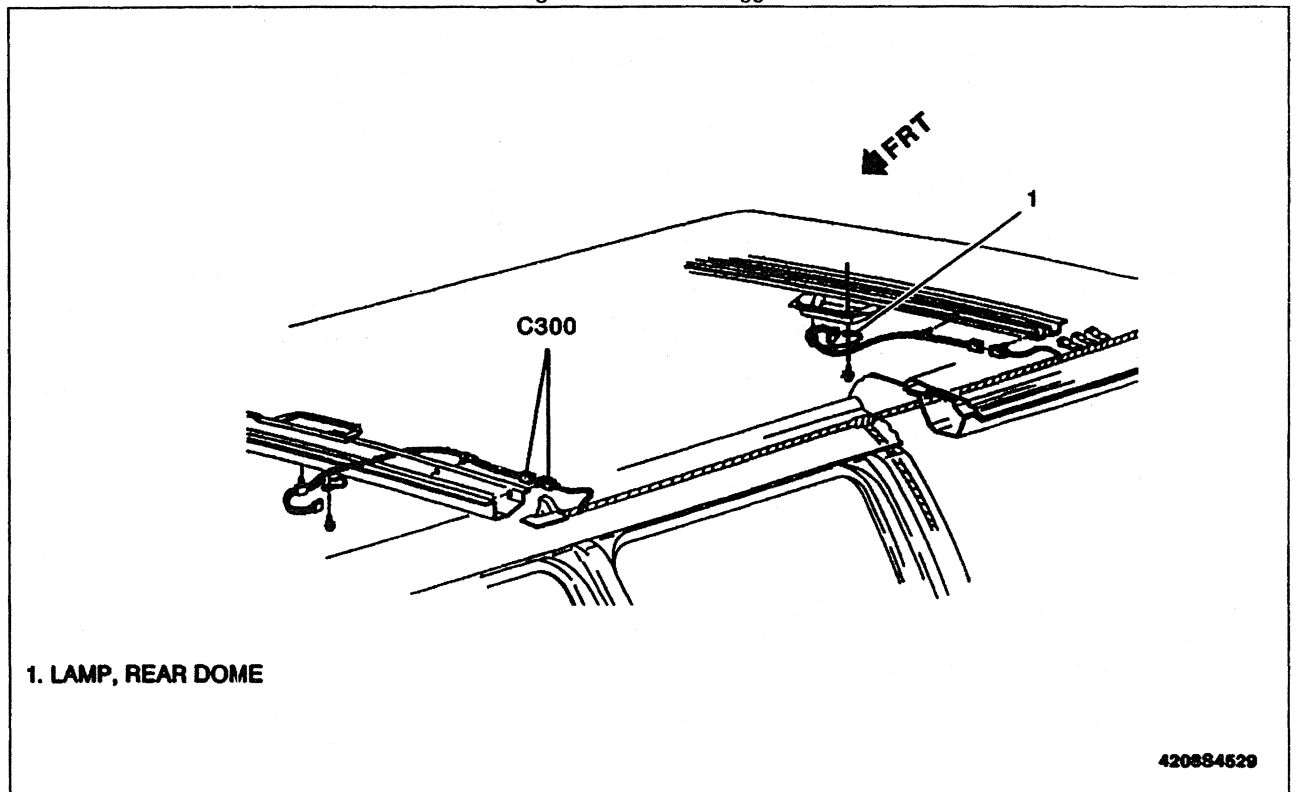


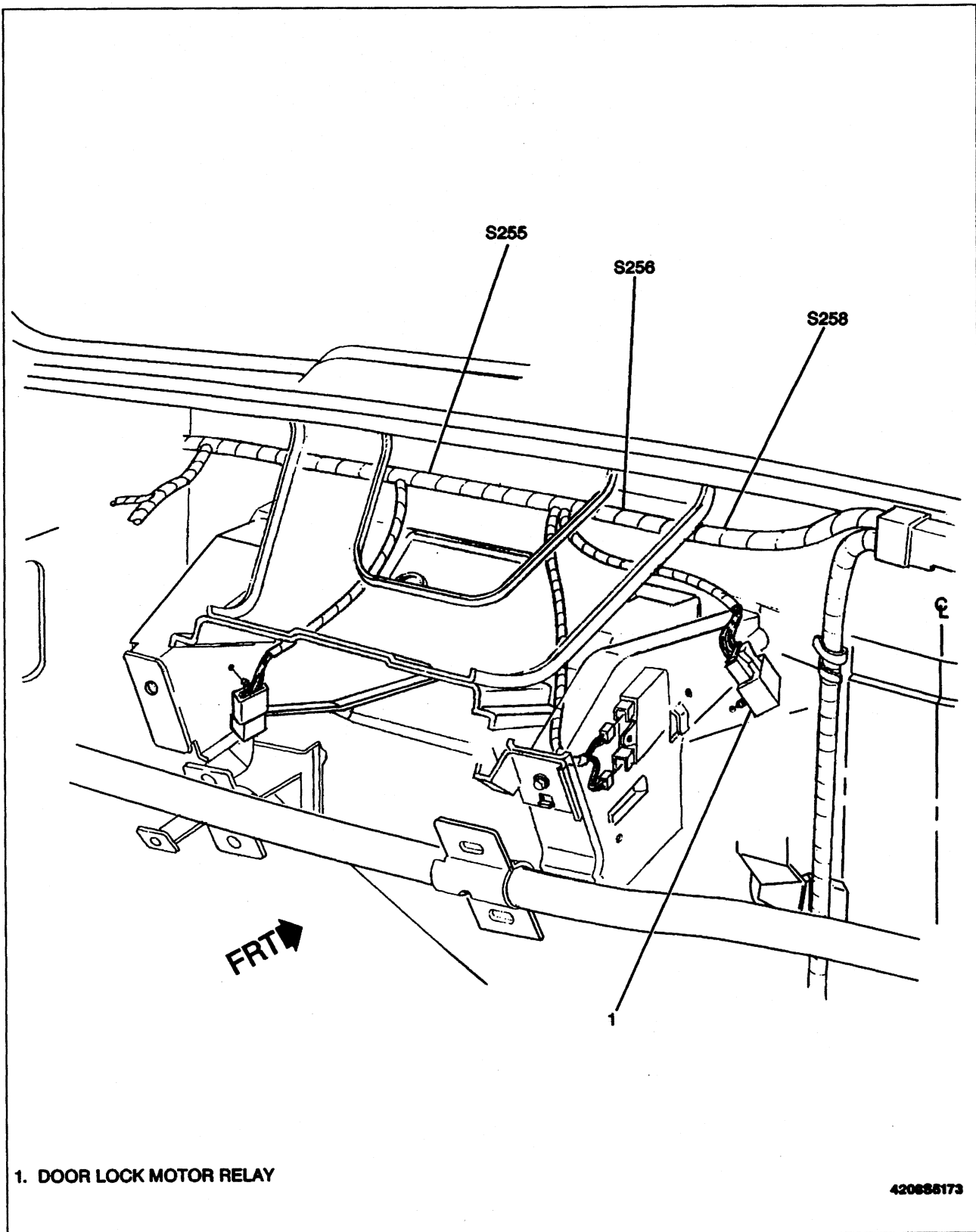
Figure 49—Rear Defogger



1. LAMP, REAR DOME

Figure 50—Rear Dome Lamp

COMPONENT LOCATION VIEWS



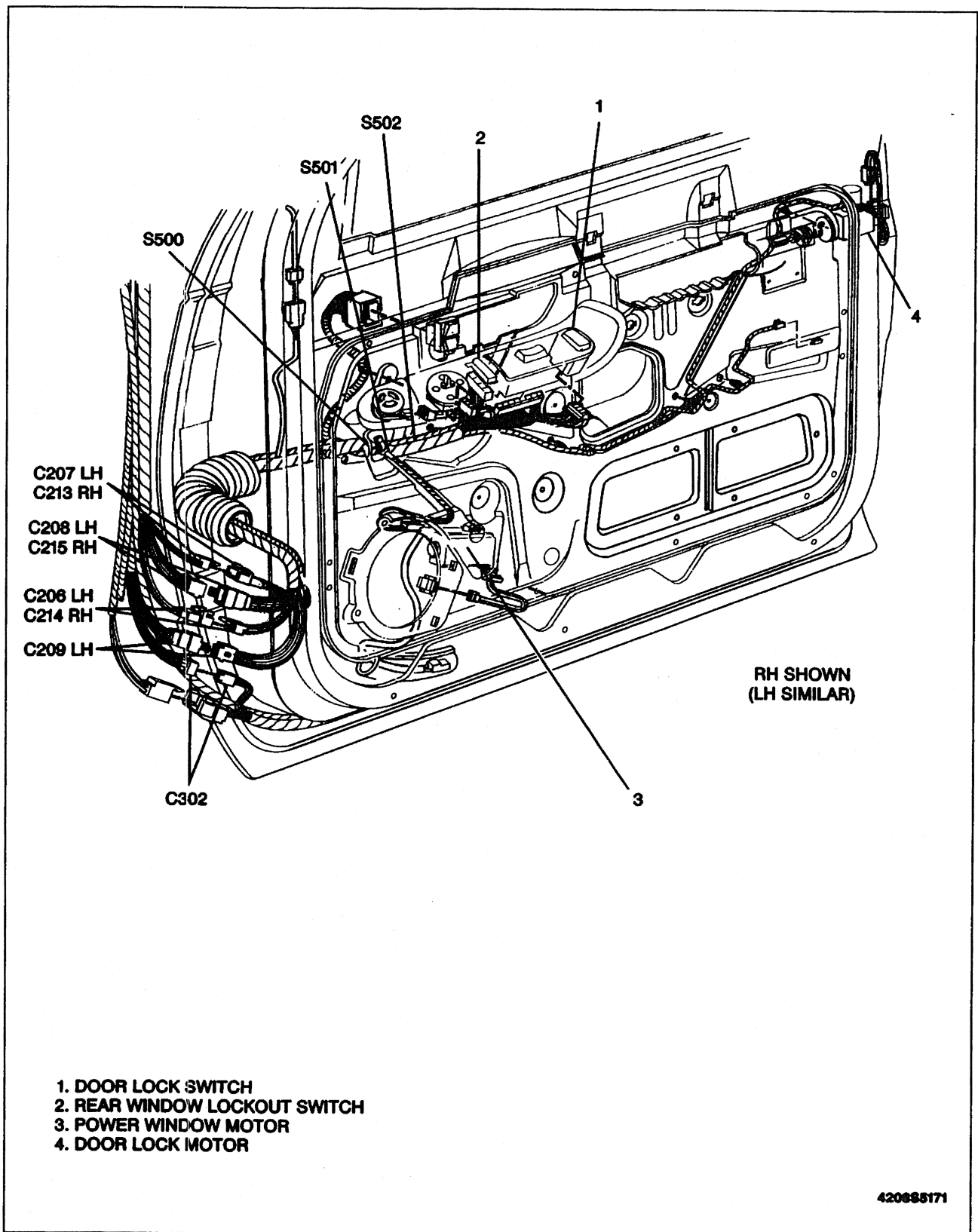


Figure 52—Front Door Wiring

COMPONENT LOCATION VIEWS

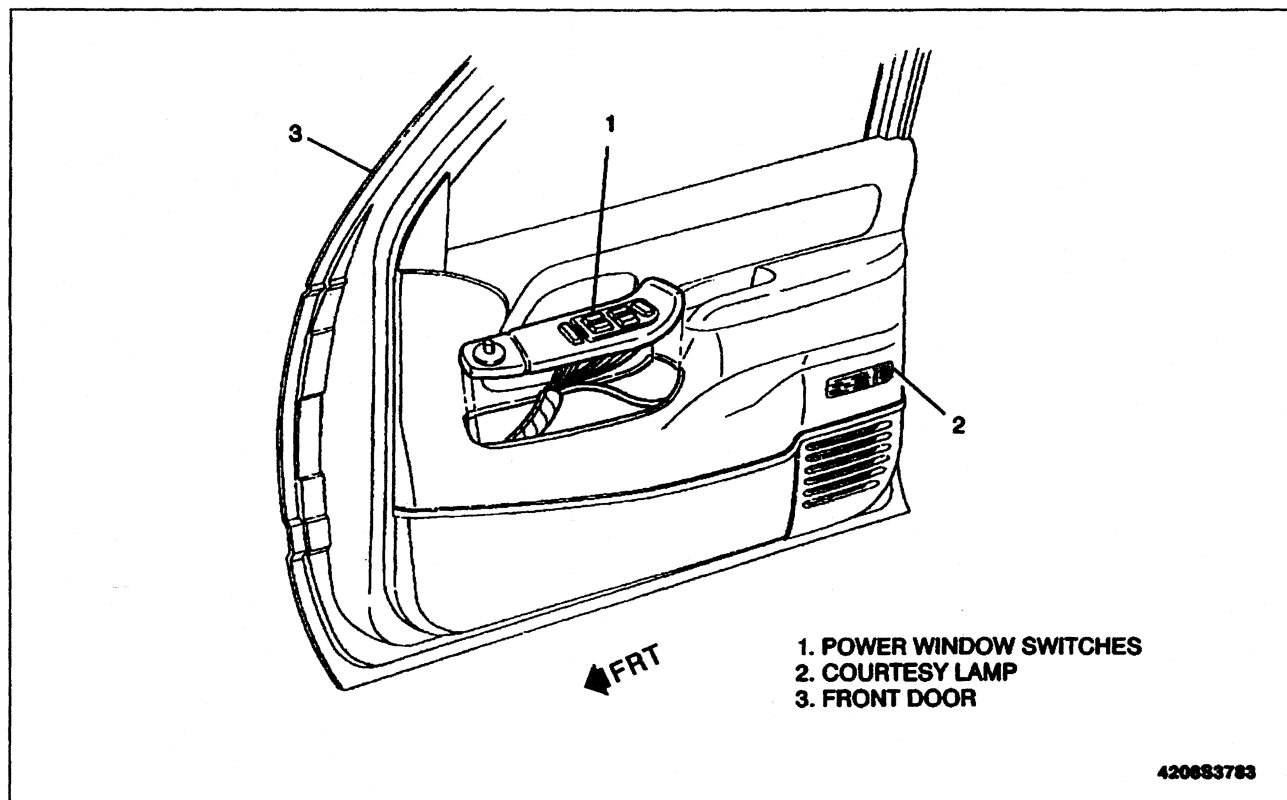


Figure 53—Power Window Switches

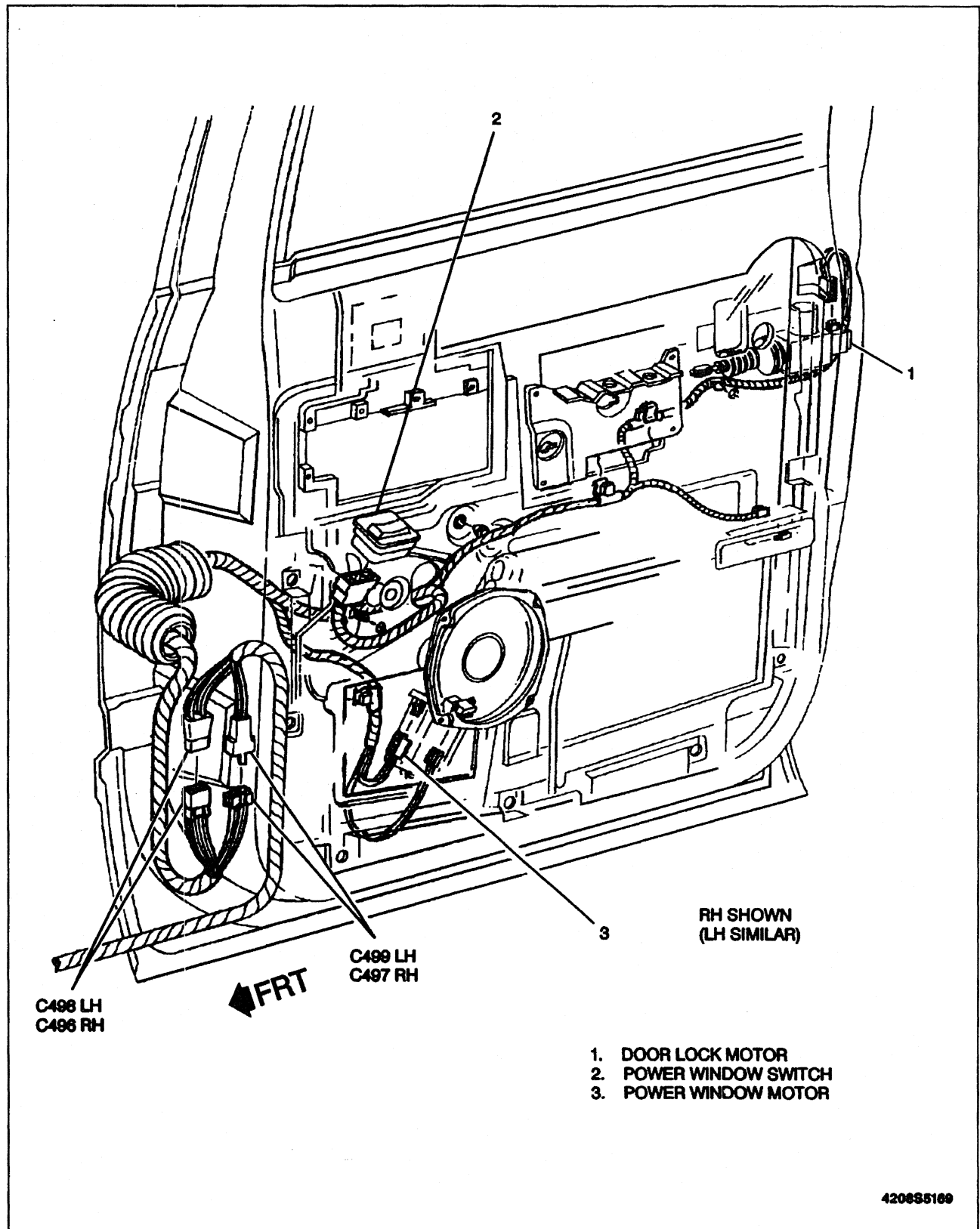


Figure 54—Rear Door Wiring

COMPONENT LOCATION VIEWS

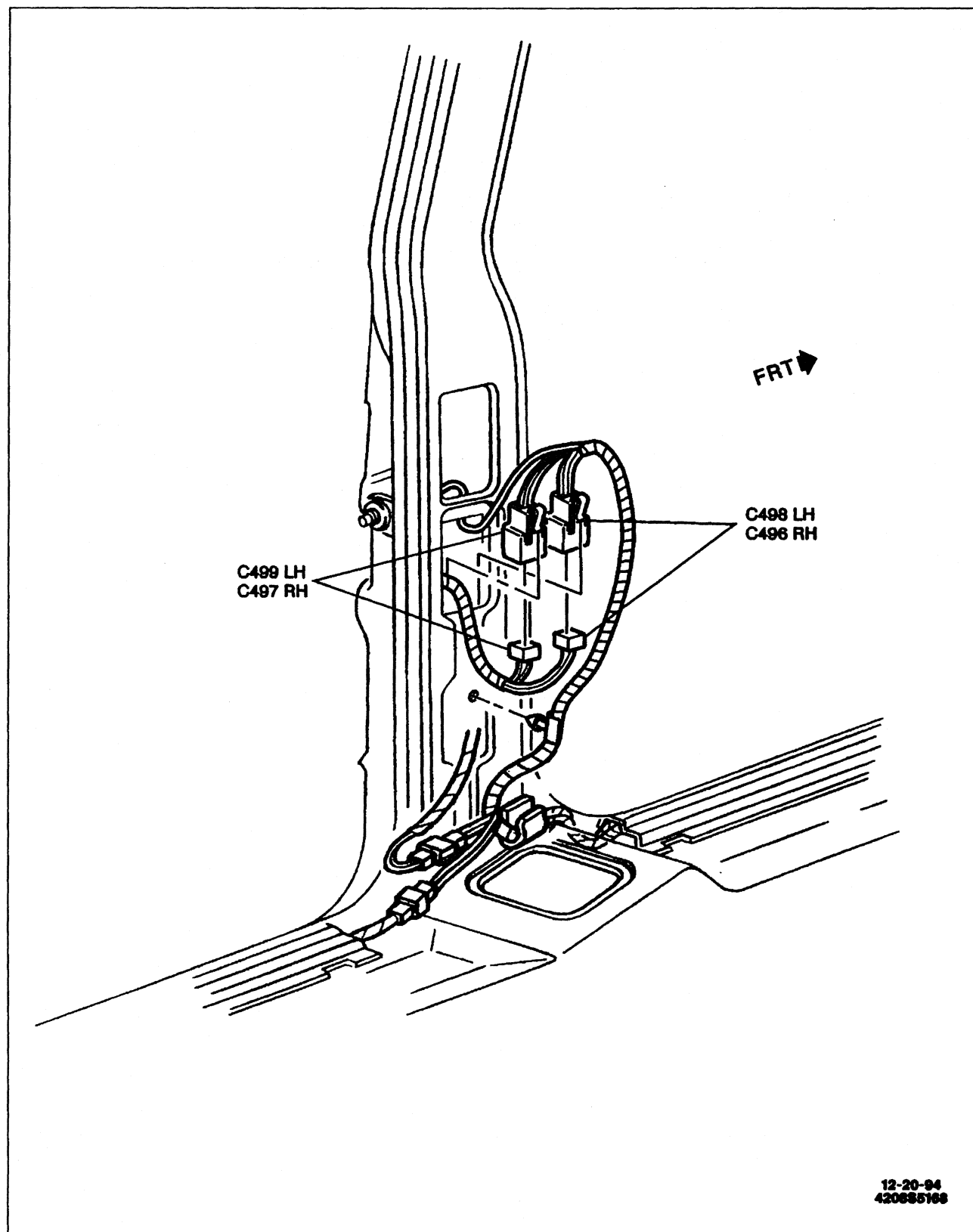


Figure 55—B-Pillar Wiring

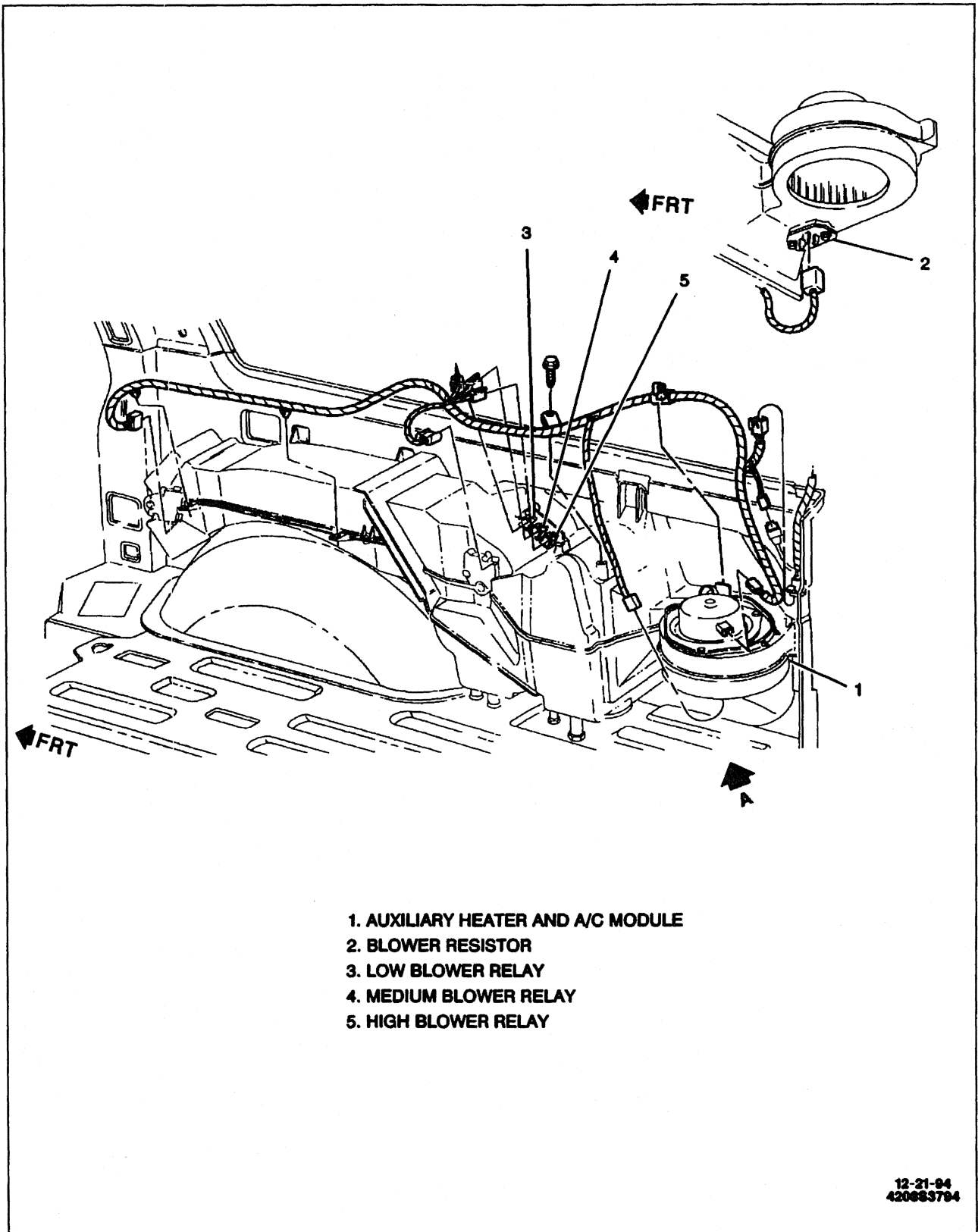


Figure 56—Auxiliary Heater and Air Conditioning Wiring, Rear

COMPONENT LOCATION VIEWS

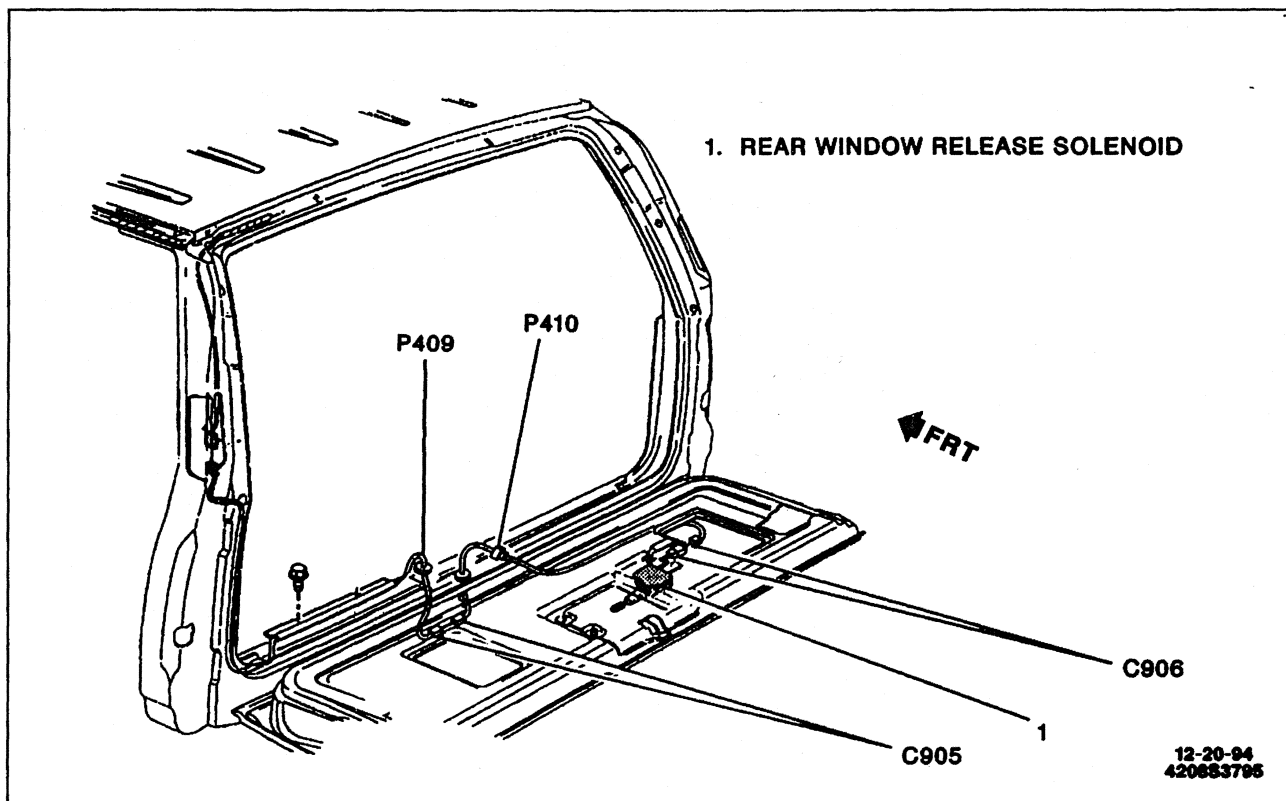


Figure 57—Rear Window Release Solenoid

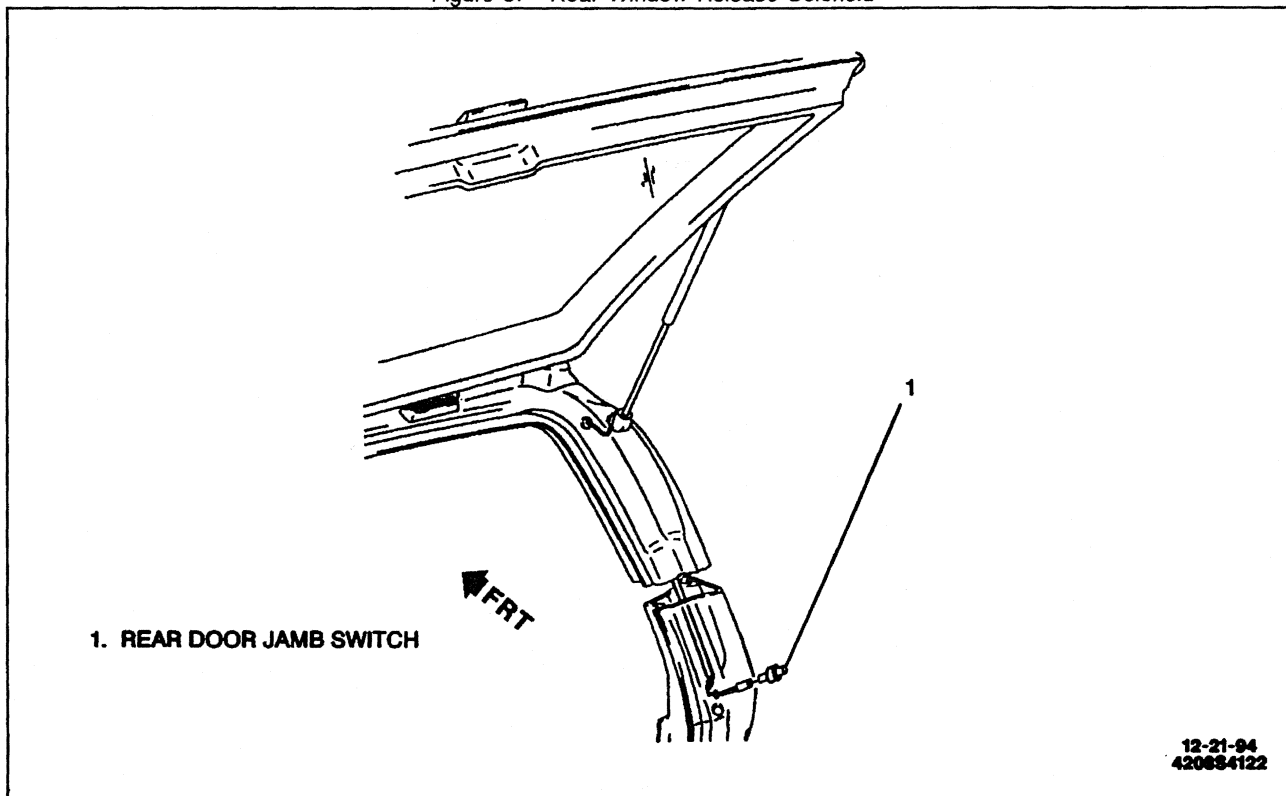


Figure 58—Rear Door Jamb Switch Wiring

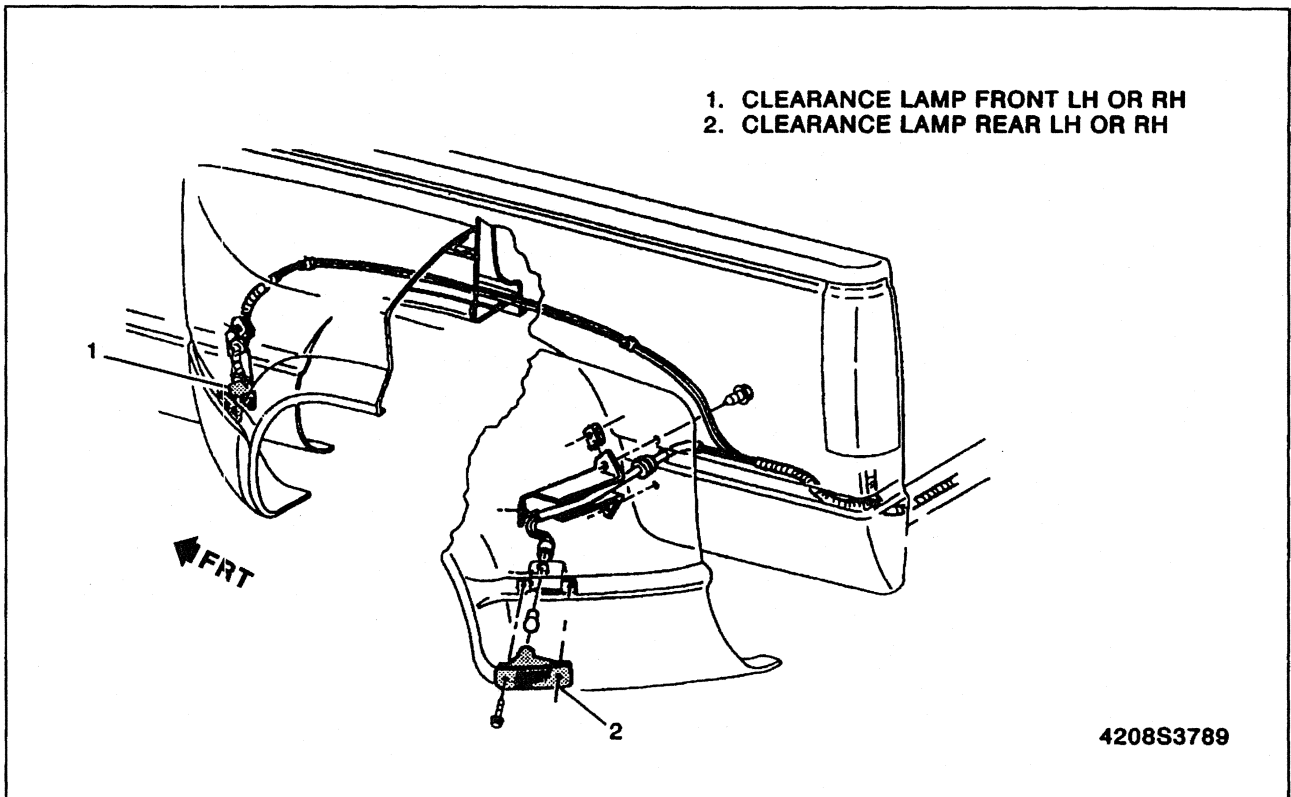


Figure 59—Rear Clearance Lamps

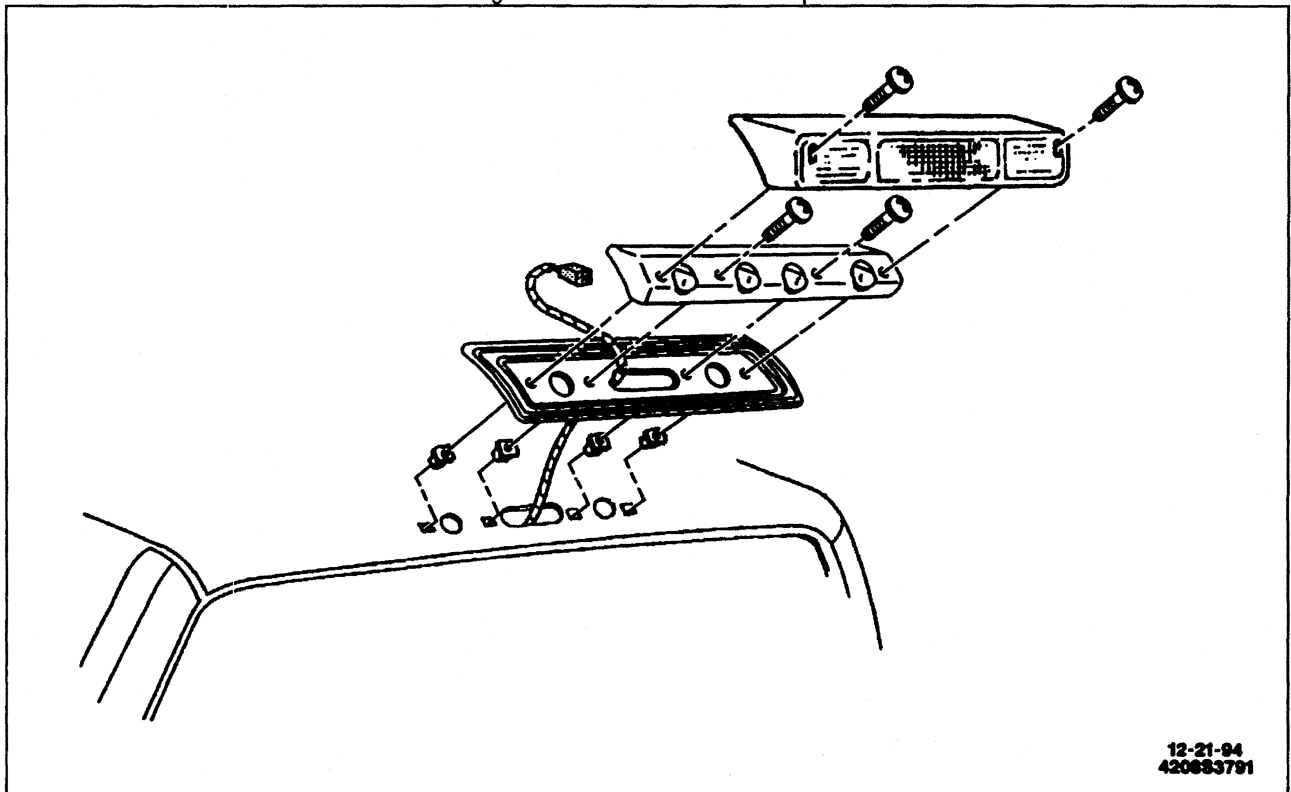


Figure 60—CHMSL and Cargo Lamp

COMPONENT LOCATION VIEWS

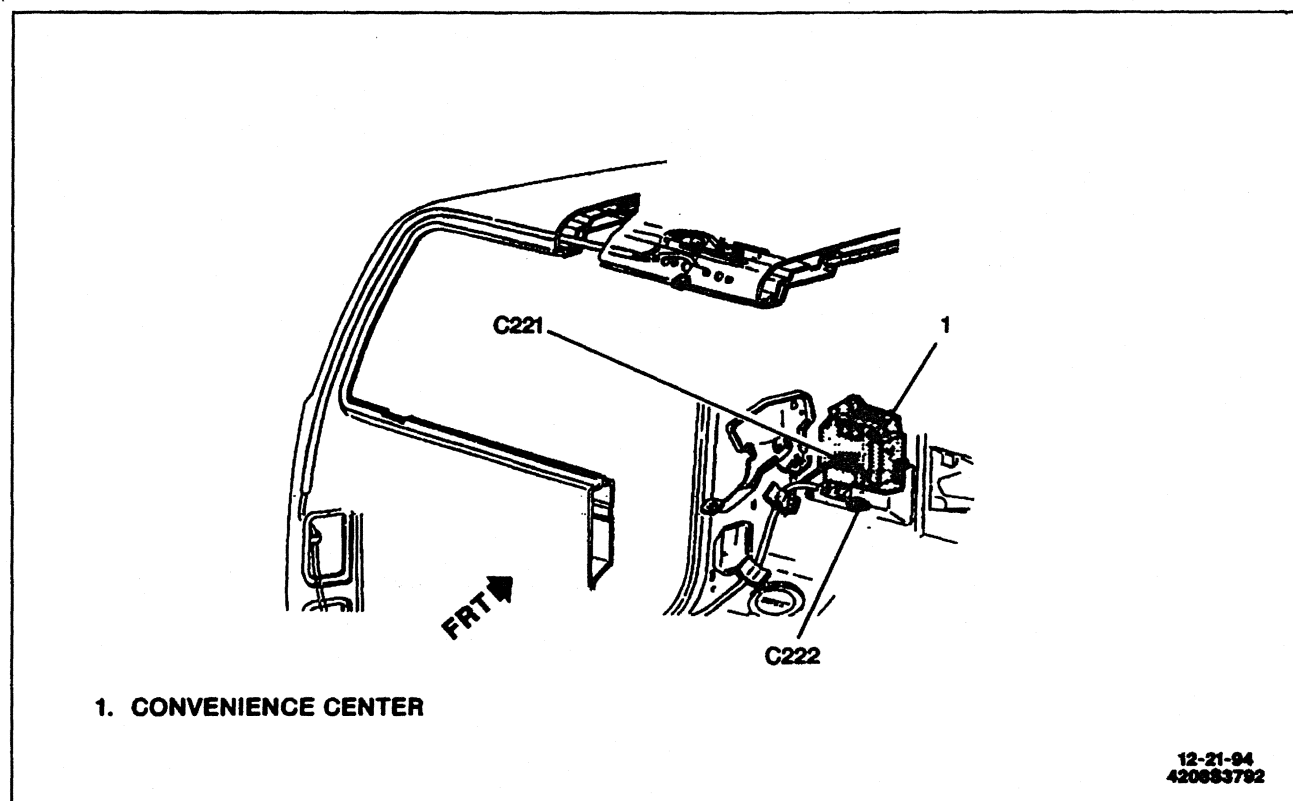


Figure 61—CHMSL and Cargo Lamp Wiring

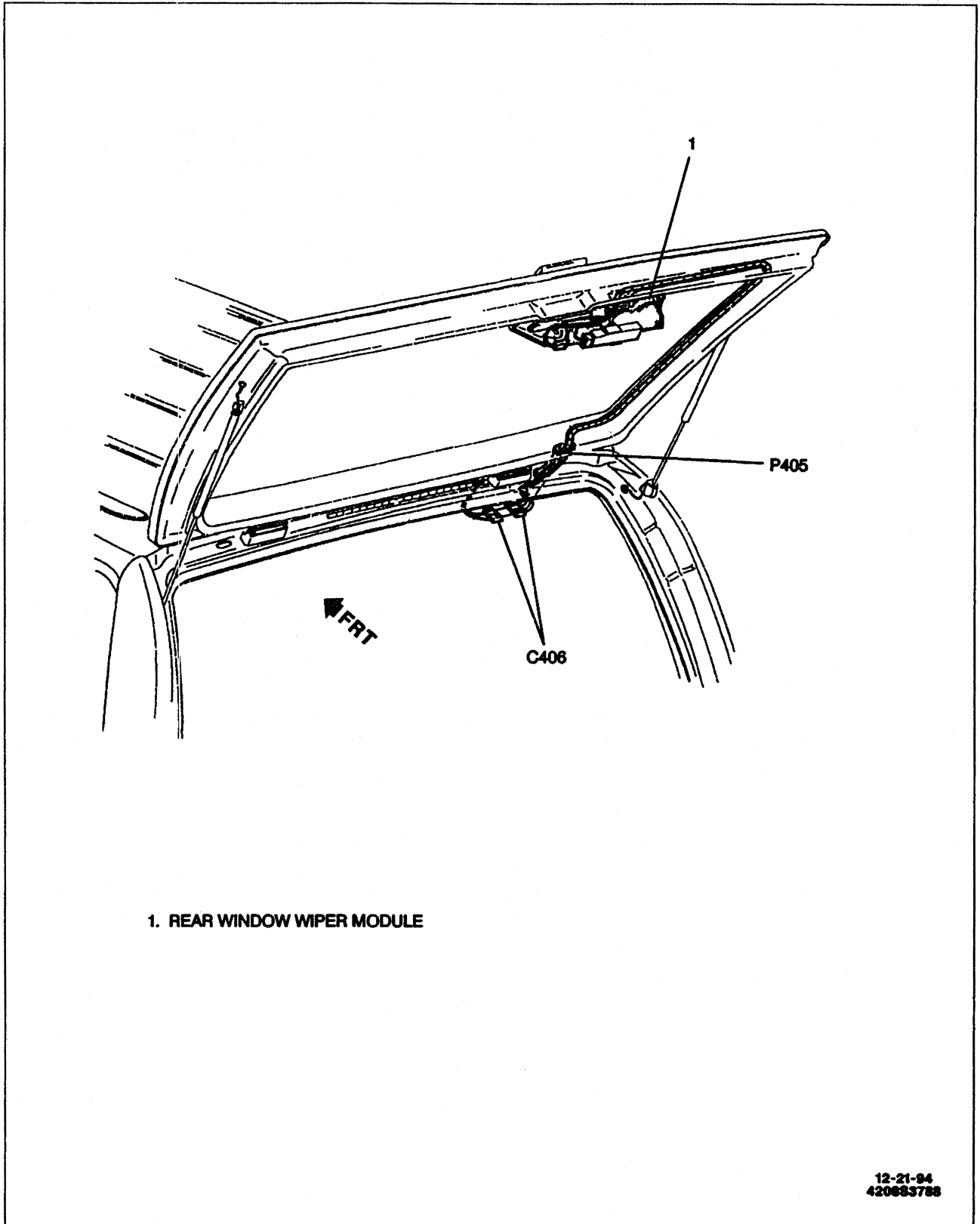


Figure 62—Rear Wiper/Washer

COMPONENT LOCATION VIEWS

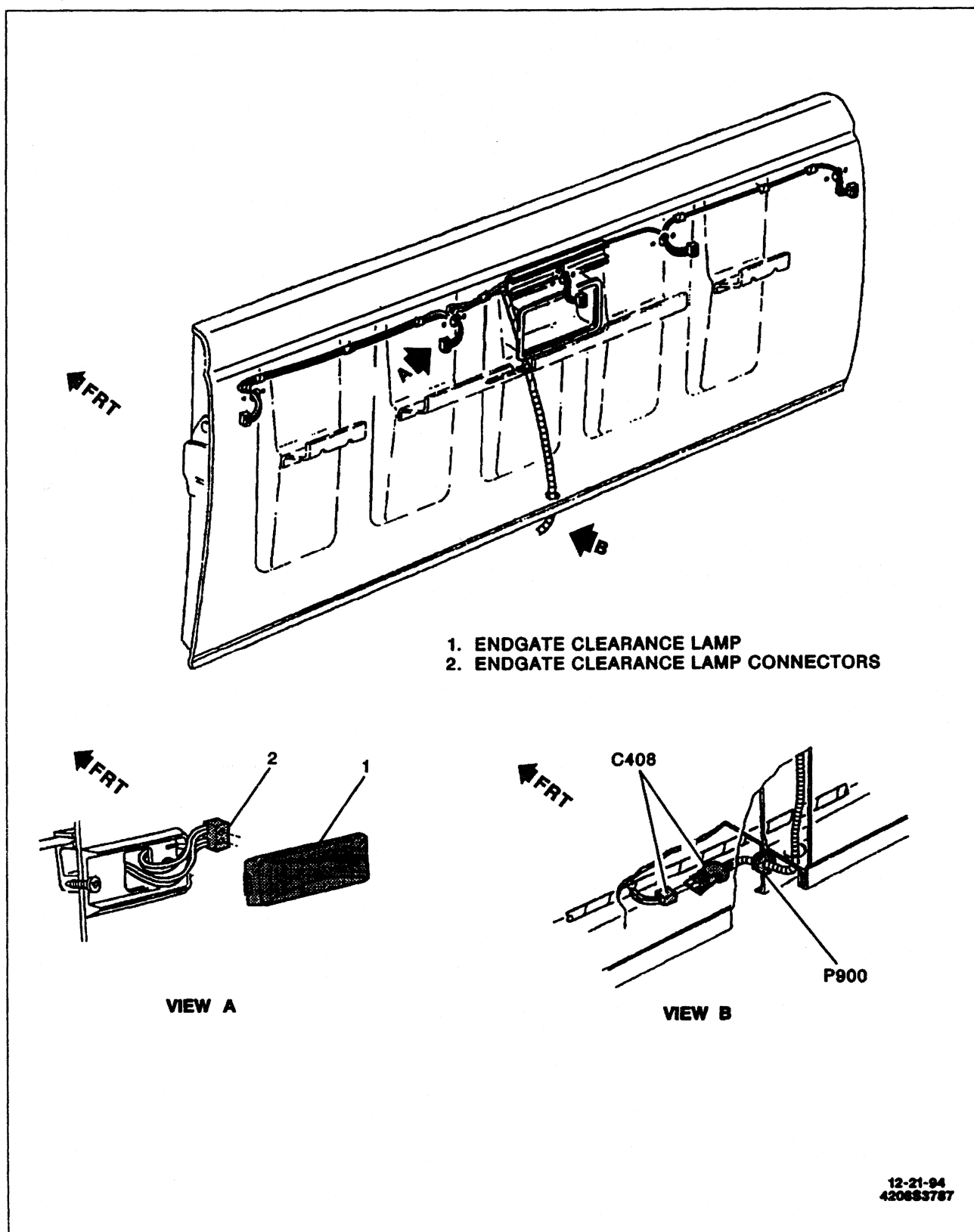


Figure 63—Engate Clearance Lamps

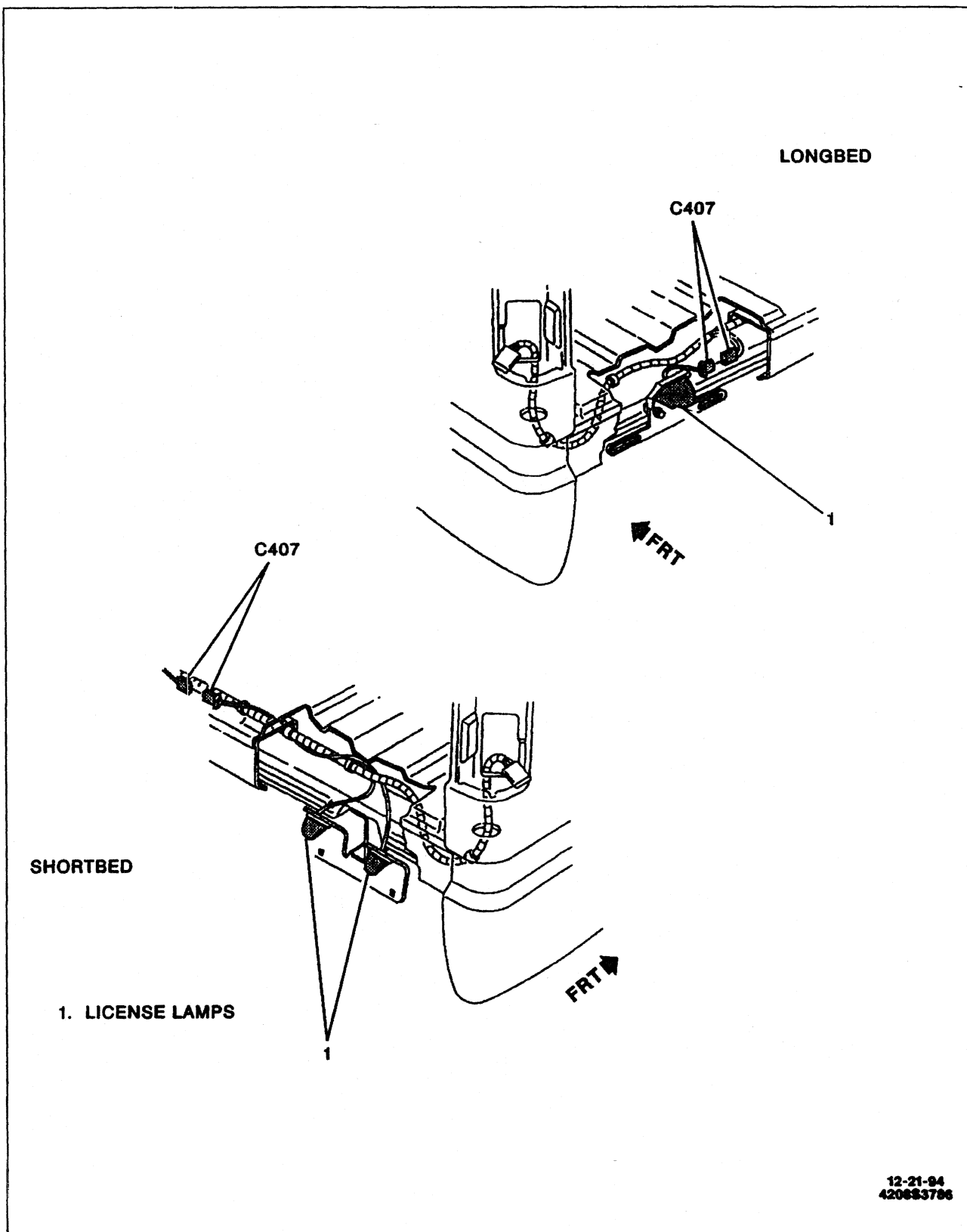


Figure 64—License Lamps

COMPONENT LOCATION VIEWS

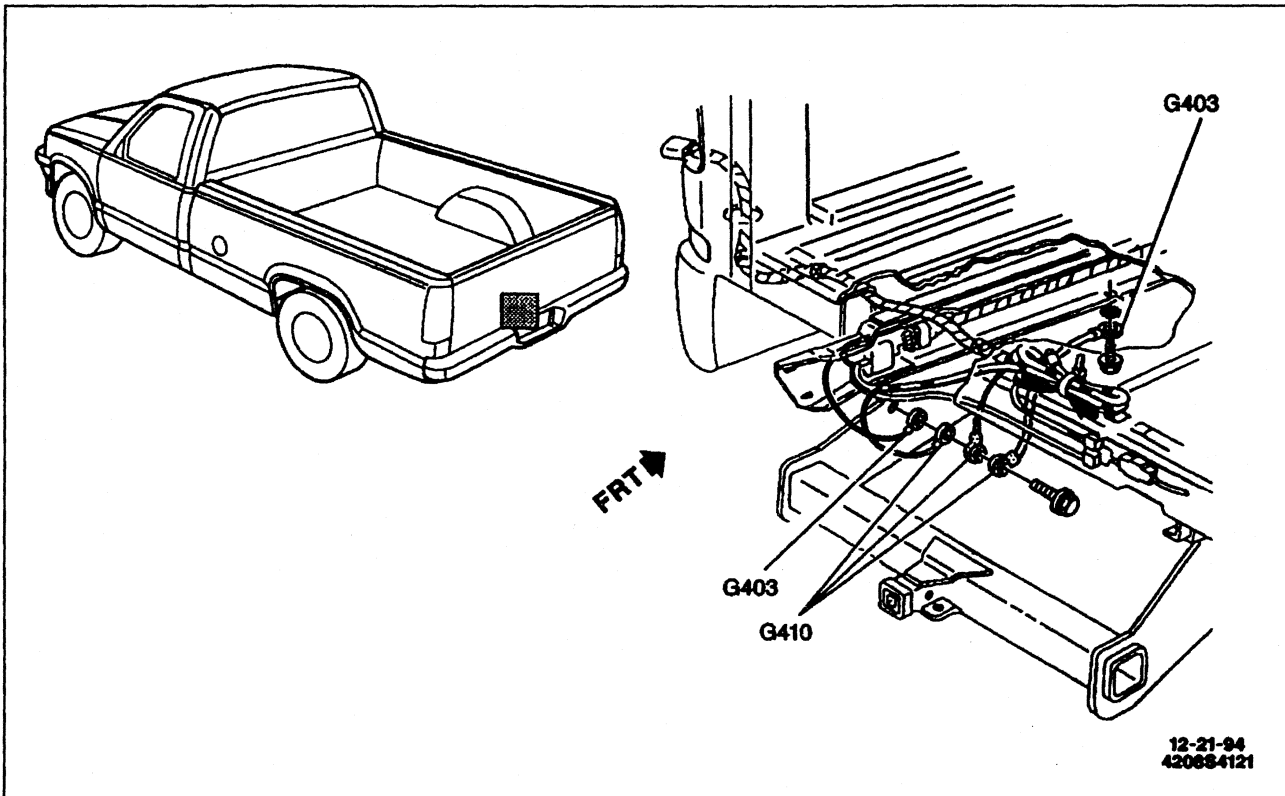


Figure 65—Trailer Wiring

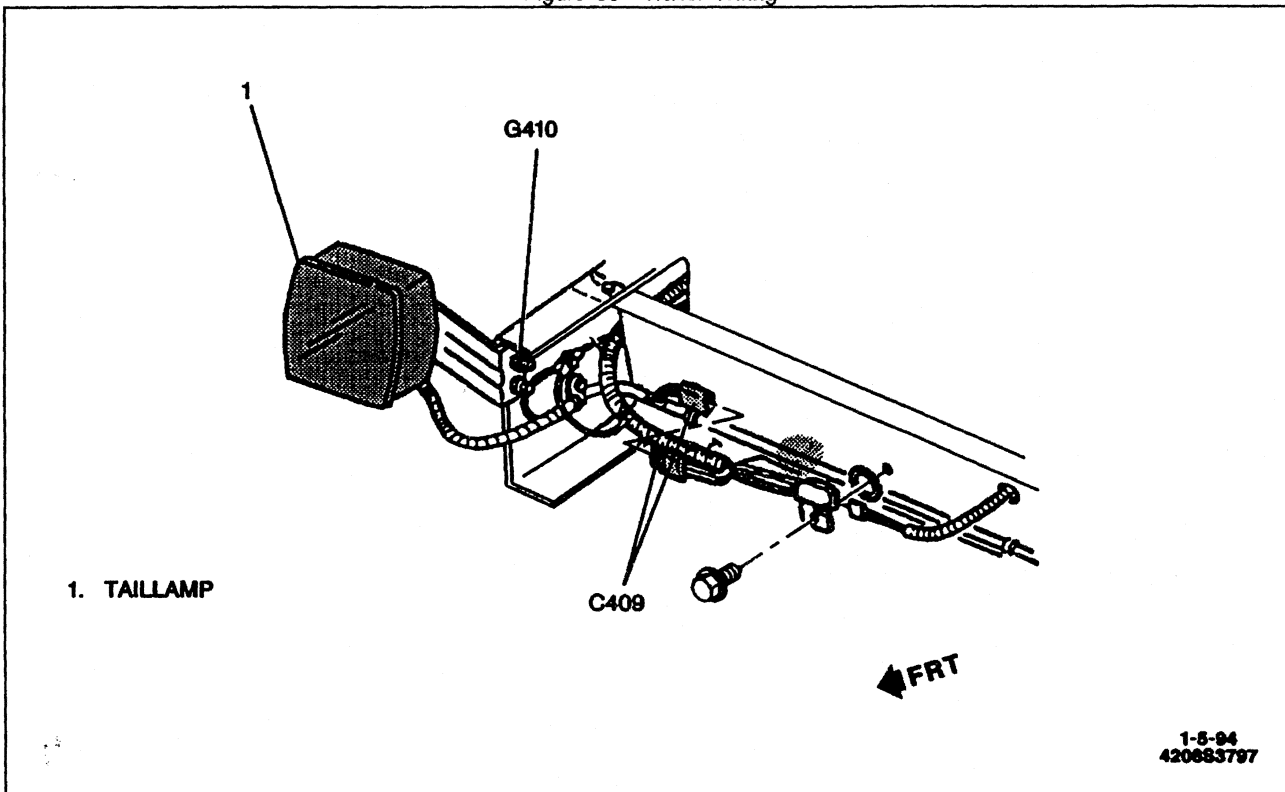
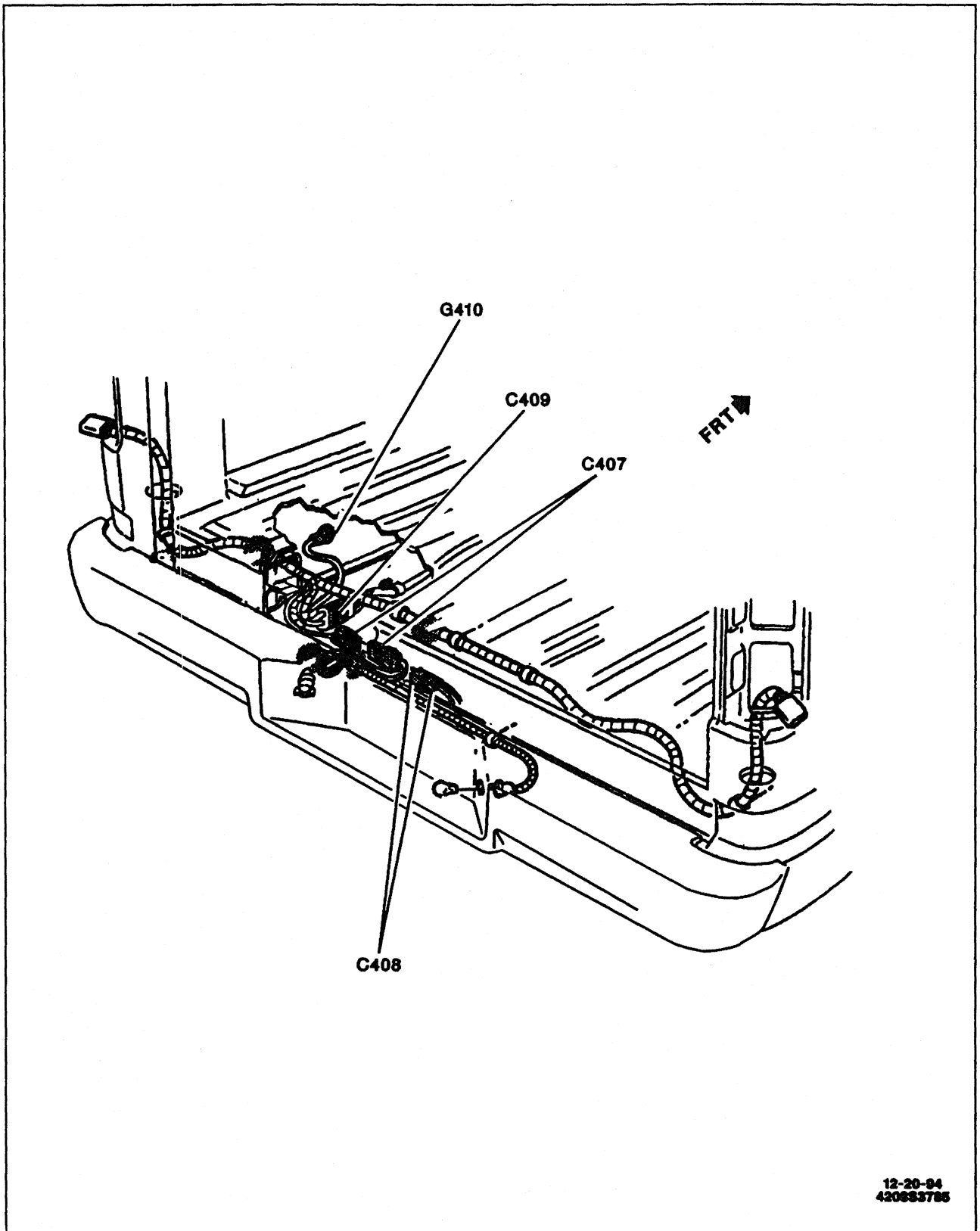


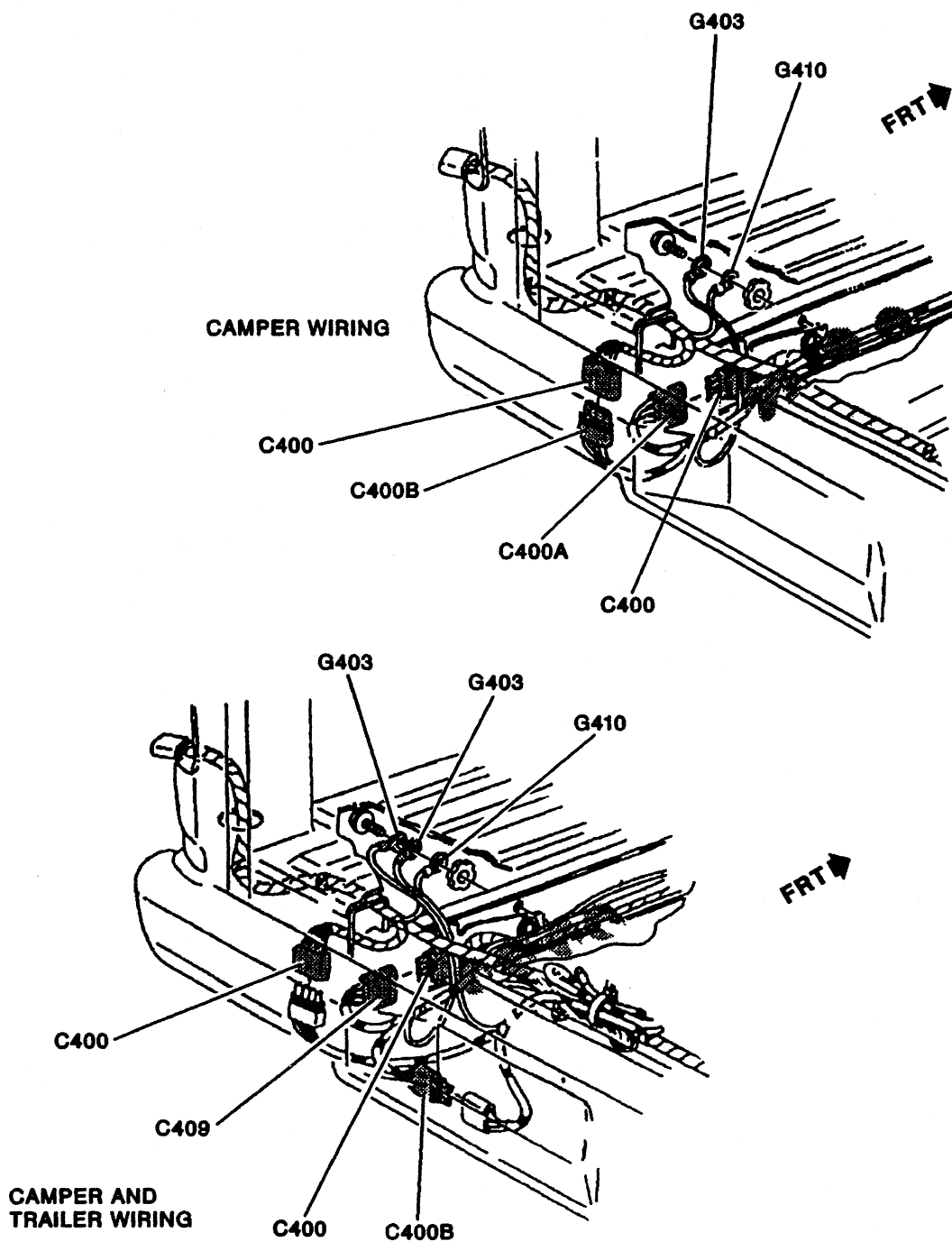
Figure 66—Rear Lamps Wiring



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Figure 67—Tail and Stoplamp Harness

COMPONENT LOCATION VIEWS



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420853779

Figure 68—Camper and Trailer Wiring

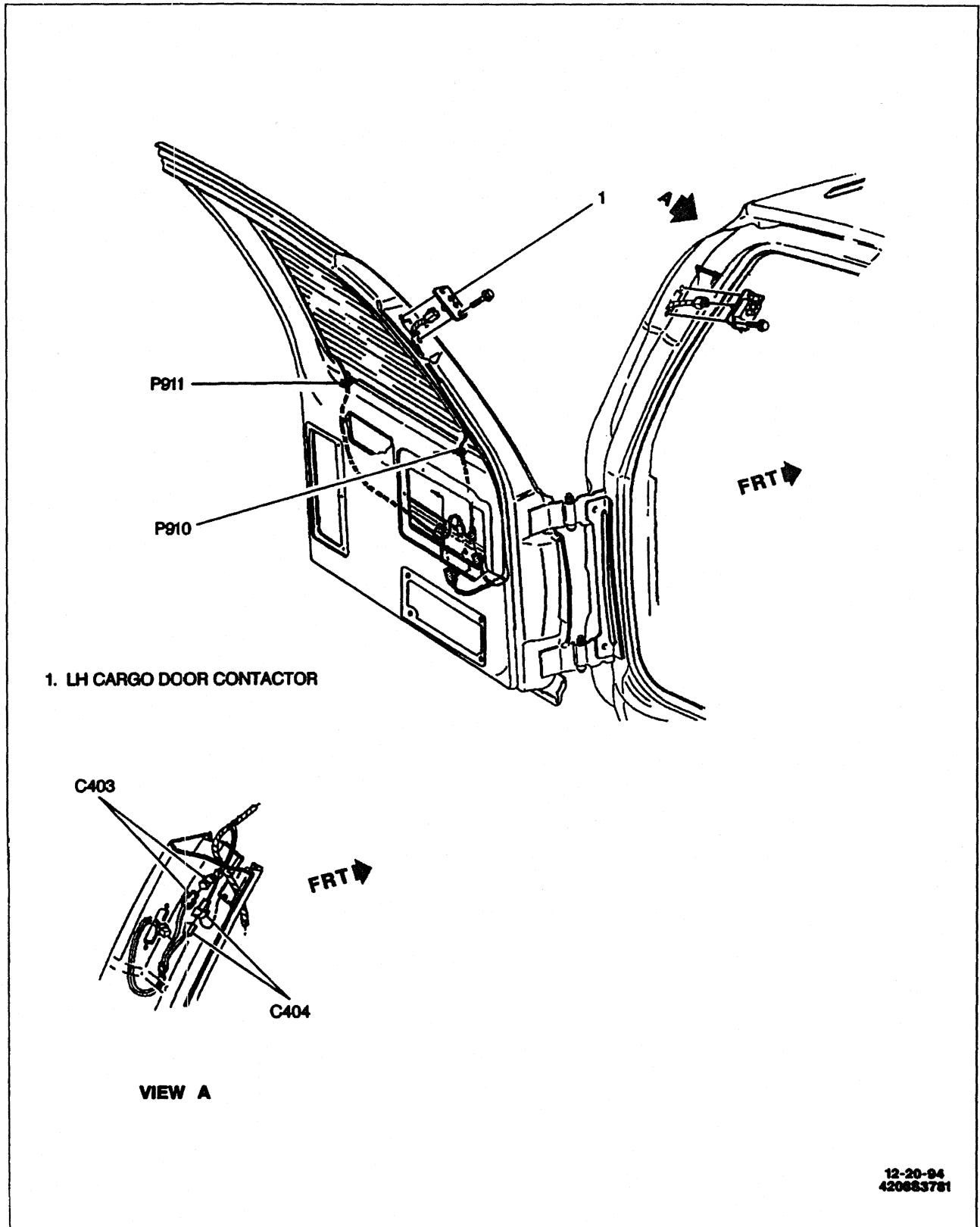


Figure 69—LH Cargo Door

COMPONENT LOCATION VIEWS

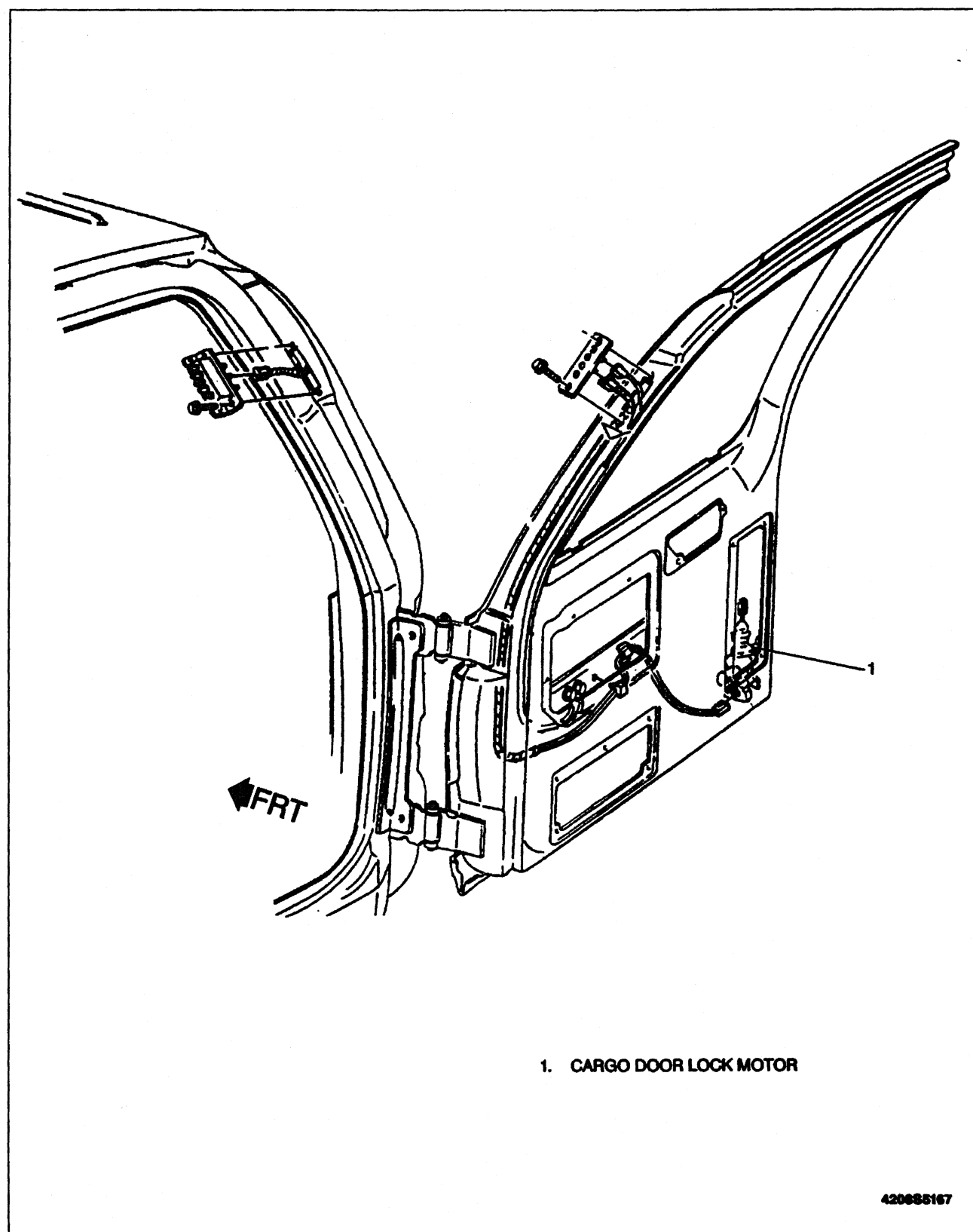


Figure 70—RH Cargo Door

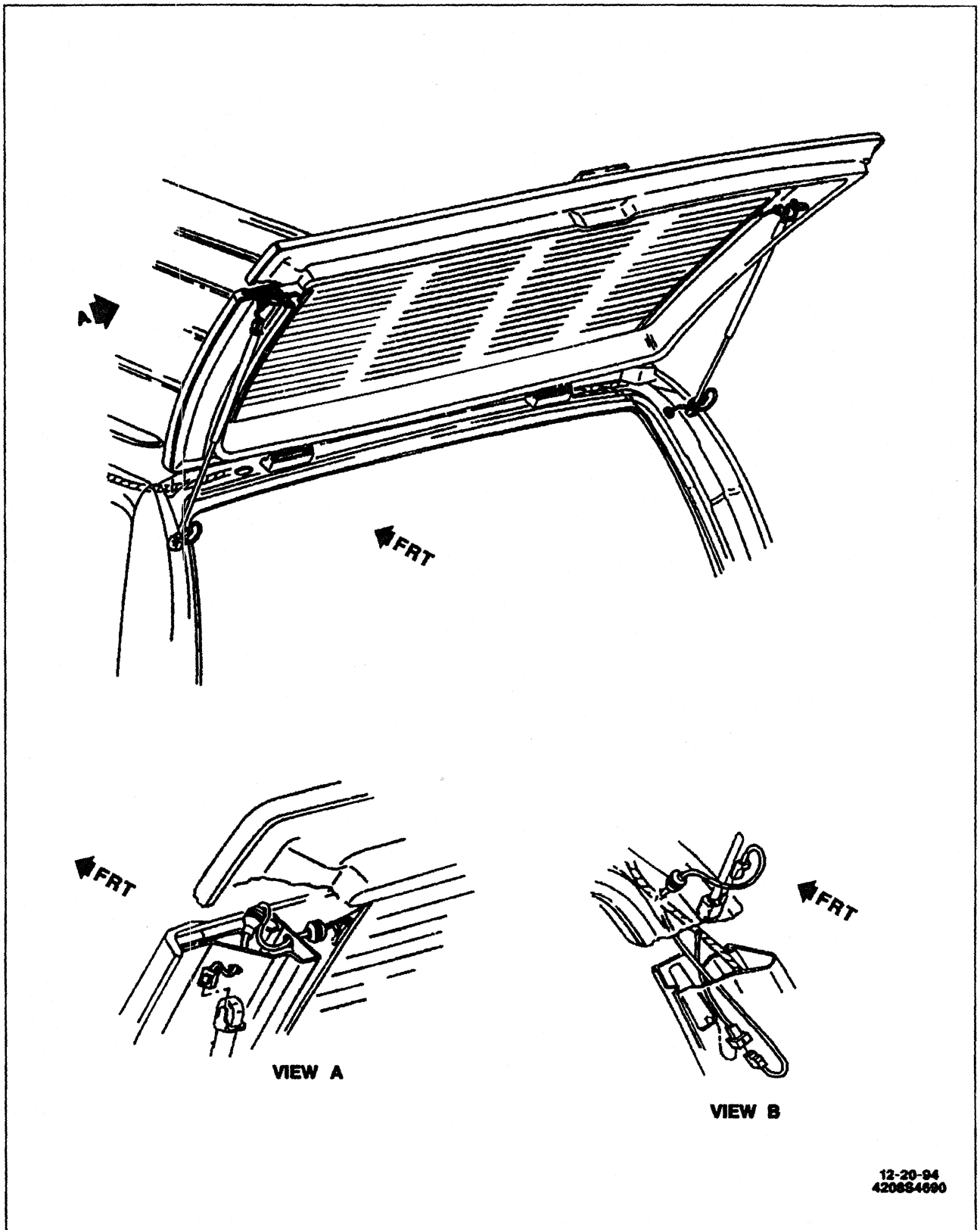
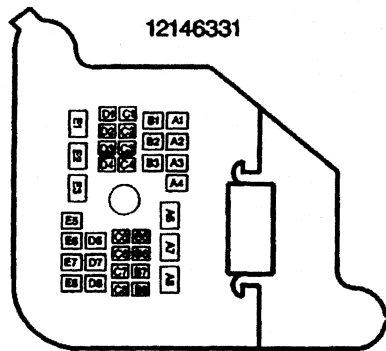


Figure 71—Rear Window Defogger Wiring, Rear

8A - 202 - 0 ELECTRICAL DIAGNOSIS

HARNESS CONNECTOR FACES



280 - SERIES
C100
BLACK

420884460

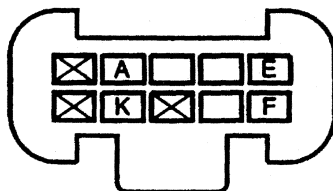
CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	WHT		17	STOPLAMP SWITCH OUTPUT
A1	RED		542	BATTERY FUSED FEED
A2	PNK		1020	IGNITION FEED - OFF, RUN, CRANK
A3	ORN		1440	BATTERY FEED
A4	LT BLU		20	STOPLAMP FEED
A6	RED		42	BATTERY FEED
A7	RED		142	BATTERY FEED
A8	RED		242	BATTERY FEED
B1	PPL		92	WINDSHEILD WIPER MOTOR FEED - HIGH SPEED
B2	YEL		143	ACCESSORY FEED
B3	BRN		96	WINDSHEILD WIPER SWITCH SIGNAL - PULSE DELAY
B5	PPL		806	IGNITION FEED - CRANK
B6	BRN/WHT		419	CHECK ENGINE INDICATOR LAMP OUTPUT
B8	DK GRN/WHT		1614	AIR INLET VALVE MOTOR FEED
C1	BLK		28	HORN RELAY OUTPUT - COIL
C2	YEL		1737	NEUTRAL SAFETY SWITCH OUTPUT - PARK/NUETRAL
C3	BRN		25	CHARGE
C4	TAN		31	OIL PRESSURE INDICATOR LAMP OUTPUT
C5	DK GRN		35	COOLANT TEMPERATURE INDICATOR LAMP OUTPUT
C6	TAN/WHT		33	BRAKE WARNING INDICATOR LAMP OUTPUT
C7	PNK		139	IGNITION FEED

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C8	LT GRN		867	ABS FAILURE INDICATOR OUTPUT
D1	TAN/WHT		799	ABS DIAGNOSTIC SIGNAL
D2	LT BLU/BLK		396	CRUISE CONTROL ENGAGE SIGNAL
D3	WHT		696	CLUSTER SPEED SIGNAL
D4	DK BLU		507	WAIT LAMP
D6	BLK/WHT		1695	FOUR WHEEL DRIVE FRONT WHEEL LOCK INDICATOR
D7	LT GRN		66	AIR CONDITIONING SWITCH OUTPUT
D8	BRN		441	IGNITION FUSED FEED
E1	PPL		6	STARTER SOLENOID FEED
E1	YEL		5	IGNITION FEED - CRANK
E2	PNK		3	IGNITION FEED
E3	RED		342	BATTERY FUSED FEED
E5	BRN		241	IGNITION FUSED FEED
E6	PPL/WHT		821	VEHICLE SPEED SENSOR (VSS) - SIGNAL
E7	LT GRN/BLK		822	VEHICLE SPEED SENSOR (VSS) - RETURN
E8	RED		490	FUEL PUMP RELAY FEED - PRIME

8A - 202 - 2 ELECTRICAL DIAGNOSIS

HARNESS CONNECTOR FACES

12065425

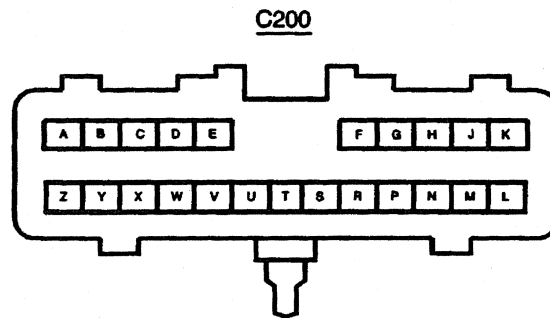


C103

CRUISE CONTROL MODULE

4208S5278

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	GRY		397	CRUISE CONTROL SWITCH - ON
B	DK BLU		84	CRUISE CONTROL SWITCH - SET/COAST
C	GRY/BLK		87	CRUISE CONTROL SWITCH - RESUME/ACCEL
D	BRN/WHT		379	CLUTCH PEDAL POSITION SWITCH
E	BLK/WHT		151	ENGINE CONTROL MODULE - ENGINE
F	BRN		41	IGNITION FUSED FEED
G	WHT		17	STOP LAMP SWITCH
K	DK GRN/WHT		817	VEHICLE SPEED SENSOR (VSS) - 4000 PULSES



12092248
23 - WAY M METRI - PACK ACT 280
BLK

4208S4459

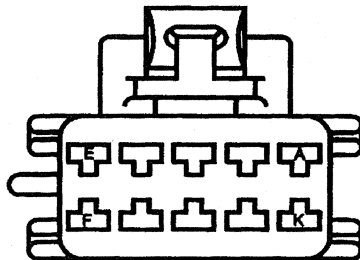
CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	WHT		121	TACHOMETER SIGNAL
B	BLK/WHT		451	ENGINE CONTROL MODULE GROUND
C	BRN		437	VEHICLE SPEED SIGNAL
D	PPL		420	BRAKE PEDAL SWITCH OUTPUT - TORQUE CONVERTER CONTROL
E	TAN		800	SERIAL DATA SIGNAL - UART 8192 BAUD
F	BRN/WHT		379	CLUTCH PEDAL POSITION SWITCH
F	BLK/WHT		771	TRANSMISSION POSITION SWITCH SIGNAL - BIT 1
G	YEL		772	TRANSMISSION POSITION SWITCH SIGNAL - BIT 2
H	GRY		773	TRANSMISSION POSITION SWITCH SIGNAL - BIT 3
J	WHT		776	TRANSMISSION POSITION SWITCH SIGNAL - PARIT BIT
K	YEL/BLK		68	LOW COOLANT LEVEL INDICATOR LAMP OUTPUT
K	PPL		806	FUSED FEED - CRANK
L	WHT/BLK		448	DIAGNOSTIC ENABLE SIGNAL - POWERTRAIN
M	DK GRN		389	VEHICLE SPEED SIGNAL (VSS) - 400 PULSES PER MILE
N	LT BLU		901	WATER VALVE SIGNAL
P	BLK/WHT		1751	SIR GROUND
R	DK BLU		84	CRUISE CONTROL RESUME/ACCEL SWITCH SIGNAL
S	GRY/BLK		87	CRUISE CONTROL RESUME/ACCEL SWITCH SIGNAL
T	TAN/BLK		456	SHIFT INDICATOR LAMP OUTPUT
T	LT GRN		275	NEUTRAL SAFETY SWITCH OUTPUT - PARK
W	WHT		17	STOPLAMP SWITCH OUTPUT

8A - 202 - 4 ELECTRICAL DIAGNOSIS

HARNESS CONNECTOR FACES

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
X	DK BLU		1716	ECM SPEED SIGNAL - 2000 PULSES
Y	ORN		461	SERIAL DATA SIGNAL - 160 BAUD
Y	WHT/BLK		176	FORE

12064769

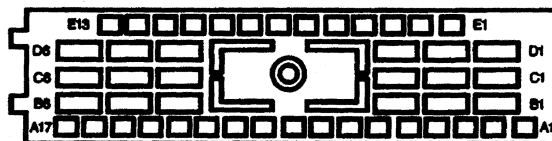
C204

ENGINE TO I/P

4208S5270

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	WHT/BLK		997	TPS #1 REF VOLTAGE
B	DK BLU		992	TPS #1 SIGNAL
C	LT BLU		993	TPS #2 SIGNAL
D	BRN		998	TPS #1 GROUND
E	TAN		996	TPS #2 REF VOLTAGE
F	YEL/BLK		995	TPS #3 REF VOLTAGE
G	DK GRN		994	TPS #3 SIGNAL
H	PPL		999	TPS #2 GROUND
J	YEL		961	TPS #3 GROUND
K	BRN/WHT		397	CLUTCH PEDAL POSITION SWITCH

HARNESS CONNECTOR FACES

C266

12077822

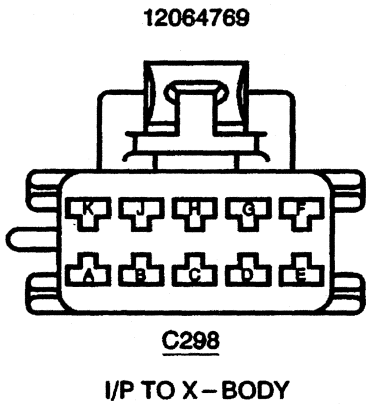
48 - WAY M METRI - PACK MIXED SERIES
BLK

4208S4679

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A1	WHT		17	STOP LAMP SWITCH
A2	PPL		16	TURN FLASHER OUTPUT
A3	DK GRN		916	TURN FLASHER FEED
A6	DK BLU		15	TURN SIGNAL LAMP FEED - RIGHT FRONT
A7	LT BLU		14	TURN SIGNAL FEED - LEFT FRONT
A11	BLK		28	HORN RELAY OUTPUT - COIL
A12	GRY		397	CRUISE CONTROL ON SWITCH
A13	BRN		41	IGNITION FEEED
A14	DK BLU		84	CRUISE CONTROL SET/COAST SWITCH SIGNAL
A15	GA/BLK		87	CRUISE CONTROL RESUME/ACCEL SWITCH SIGNAL
A16	BLK		150	GROUND
A17	DK GRN/WHT		1135	BRAKE TRANSMISSION SHIFT INTERLOCK SOLENOID FEED
B2	BLK		150	GROUND
B3	LT GRN		80	KEY REMINDER SWITCH SIGNAL
B4	TAN		159	KEY REMINDER SWITCH OUTPUT
B5	TAN/WHT		33	BRAKE WARNING INDICATOR LAMP OUTPUT
C1	WHT		1390	IGNITION SWITCH OUTPUT, OFF, RUN, CRANK
C2	BLK		150	GROUND
C5	PNK		3	IGNITION FEED
C6	ORN		300	IGNITON FEED
D1	YEL		5	IGNITON SWITCH OUTPUT - CRANK

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
D2	RED		342	BATTERY FEED
D5	RED		242	BATTERY FEED
D6	BRN		4	IGNITION SWITCH OUTPUT - ACCESSORY
E1	DK GRN		916	FLASHER RETURN
E2	LT BLU		20	STOPLAMP FEED
E3	PPL		92	WINDSHEILD WIPER MOTOR FEED - HIGH SPEED
E4	YEL		143	ACCESSORY FEED
E5	BRN		96	WINDSHEILD WIPER SWITCH SIGNAL - PULSE DELAY
E6	DK GRN		18	STOP, TURN LAMP FEED - RIGHT REAR
E7	YEL		18	STOP, TURN LAMP FEED - LEFT REAR
E8	BRN		27	HAZARD FLASHER FEED
E9	DK GRN		916	HAZARD FLASHER FEED
E11	LT GRN		11	HIGH BEAM HEADLAMP FEED
E12	TAN		912	LOW BEAM HEADLAMP FEED
E13	YEL		10	HEADLAMP SWITCH OUTPUT

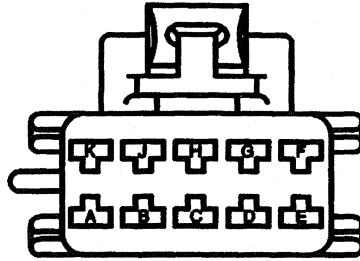
HARNESS CONNECTOR FACES



4208S5267

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	ORN		40	BATTERY FUSED FEED
B	BRN		9	PARK LAMP FEED
C	WHT		156	COURTESY LAMP
D	BLK/WHT		238	SEAT BELT SWITCH
E	GRY		8	INSTRUMENT PANEL LAMP FEED
F	WHT		17	STOP LAMP SWITCH
G	PPL		328	INTERIOR LAMP DEFEAT SWITCH
H	DK BLU/WHT		149	COURTESY LAMP
H	TAN/WHT		33	BRAKE WARNING INDICATOR
H	YEL		1737	NEUTRAL SAFETY SWITCH - PARK/NUETRAL
K	BLK/WHT		1455	KEYLESS ENTRY PROGRYM ENABLE

12064769

C299

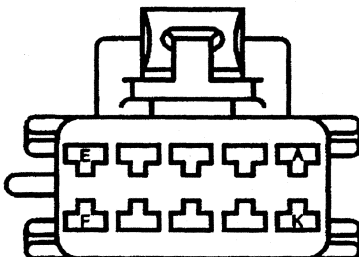
I/P TO X - BODY HARN

420885269

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	DK GRN		117	SPEAKER RETURN - RH FRONT
B	GRY		118	SPEAKER RETURN - LH FRONT
C	LT GRN		200	SPEAKER FEED - RH FRONT
D	TAN		201	SPEAKER FEED - LH FRONT
E	DK BLU		46	SPEAKER FEED - RH REAR
F	LT BLU		115	SPEAKER RETURN - RH REAR
G	YEL		116	SPEAKER RETURN - LH REAR
H	BRN		199	SPEAKER FEED - LH REAR
K	PNK		39	IGNITION FUSED FEED

HARNESS CONNECTOR FACES

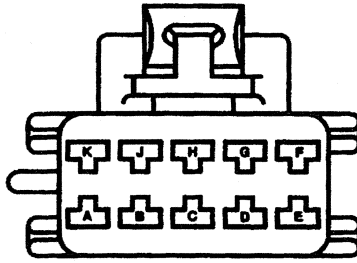
12064769

C301

REAR BODY TO X - BODY

420855280

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	WHT		156	COURTESY LAMPS
B	LT BLU		115	SPEAKER RETURN - RH REAR
C	DK BLU		116	SPEAKER RETURN - LH REAR
D	YEL		116	SPEAKER RETURN - LH REAR
E	BRN		199	SPEAKER FEED - LH REAR
F	BLK		1576	TRUNK RELEASE SWITCH
G	ORN		40	BATTERY FUSED FEED
H	BLK		150	GROUND
J	YEL		1737	NUETRAL SAFETY SWITCH - PARK/NUETRAL
K	WHT		17	STOP LAMP SWITCH



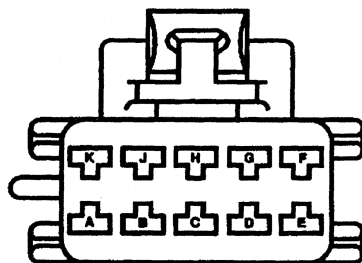
12064769

10 – WAY F METRI – PACK 150 SERIES
NAT

4208S4542

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	GRY		8	I/P LAMP FEED
B	BLK		150	GROUND
C	DK BLU		1926	AUXILIARY HVAC SWITCH OUTPUT - LOW
D	WHT		1924	AUXILIARY HVAC SWITCH OUTPUT - HIGH
E	RED		1925	AUXILIARY HVAC SWITCH OUTPUT - MEDIUM
F	ORN		1923	AUXILIARY HVAC SWITCH FEED
G	BRN		341	IGNITION FEED - FUSED
H	LT BLU		733	AIR TEMP VALVE POSITION SENSOR SIGNAL
J	LT BLU		919	FRONT CONTROL HEAT INPUT

HARNESS CONNECTOR FACES



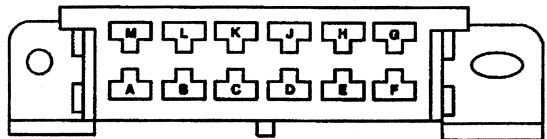
12064769

10 – WAY F METRI – PACK 150 SERIES
NAT

4208S4542

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	GRY		8	I/P LAMP FEED
B	BLK		150	GROUND
C	DK BLU		1926	AUXILIARY HVAC SWITCH OUTPUT - LOW
D	WHT		1924	AUXILIARY HVAC SWITCH OUTPUT - HIGH
E	RED		1925	AUXILIARY HVAC SWITCH OUTPUT - MEDIUM
F	DK BLU		77	AUXILIARY HVAC SWITCH FEED (WITH C36 ONLY)
G	BRN		341	IGNITION FEED - FUSED
H	DK BLU		1646	AIR TEMP VALVE POSITION SENSOR SIGNAL - PASSENGER
J	LT BLU		920	MODE DOOR OUTPUT

12020043



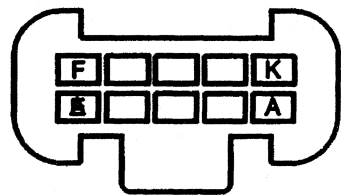
BLACK
METRI - PACK 480
DATA LINK CONNECTOR

4208S4582

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	BLK/WHT		451	ENGINE CONTROL MODULE GROUND
B	WHT/BLK		448	DIAGNOSTIC ENABLE SIGNAL - POWERTRAIN
E	ORN		461	SERIAL DATA SIGNAL - 160 BAUD
F	RED		490	FUEL PUMP RELAY FEED - NC - CONTACT - FREE
G	BLK/WHT		1455	KEYLESS ENTRY PROGRYM ENABLE SIGNAL
H	TAN/WHT		799	DIAGNOSTIC SIGNAL - ABS
J	DK GRN		835	E AND C DIAGNOSTIC SIGNAL
M	TAN		800	SERIAL DATA SIGNAL - UART 8192 BAUD - PRIMARY

HARNESS CONNECTOR FACES

12065425

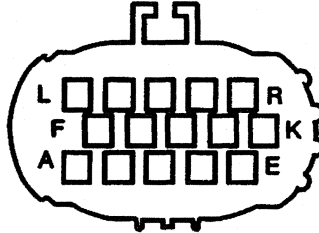


ELECTRONIC THROTTLE ACTUATOR MOTOR

420685279

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	BRN		998	TPS #1 GROUND
B	PPL		999	TPS #2 GROUND
C	LT BLU		993	TPS #2 SIGNAL
D	TAN		996	TPS #2 REF VOLTAGE
E	YEL/BLK		995	TPS #3 REF VOLTAGE
F	DK BLU		992	TPS #1 SIGNAL
G	WHT/BLK		997	TPS #1 REF VOLTAGE
J	GRY		961	TPS #3 GROUND
K	DK GRN		994	TPS #3 SIGNAL

12110779



BLACK

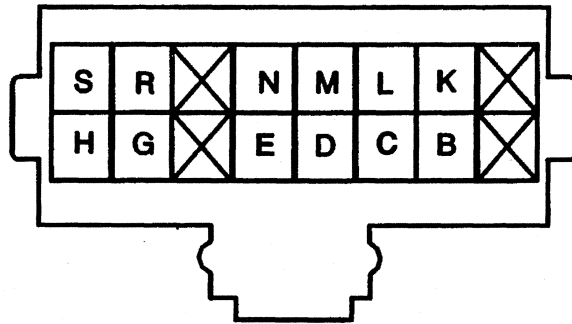
METRI - PACK 280

IN LINE TO FUEL INJECTION PUMP

420885274

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	DK BLU/WHT	.8	259	A/C COMPRESSOR DISABLE RELAY COIL
B	LT BLU	.8	1030	SINGLE POINT GROUND
C	DK BLU	.8	1031	SINGLE POINT GROUND
D	BLK	.8	1032	GROUND
E	BLK	.8	1033	GROUND
F	PNK		339	IGNITION FEED
G	BRN/WHT	.8	633	CAMSHAFT POSITION SENSOR SIGNAL
H	ORN	.8	1799	CAMSHAFT POSITION SENSOR SIGNAL - HIGH RESOLUTION
J	PNK/BLK	.8	632	CAMSHAFT POSITION SENSOR RETURN
K	YEL	.8	1578	FUEL TEMPERATURE SIGNAL
L	LT GRN	.8	260	HOOD SWITCH
M	LT GRN	.8	260	HOOD SWITCH
N	GRY	.8	474	REFERENCE VOLTAGE FEED - 5 VOLT REFERENCE
P	RED	.8	313	OIL PRESSURE SENDER ANALOG SIGNAL

HARNESS CONNECTOR FACES

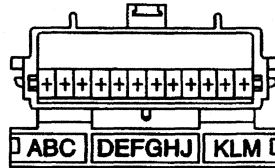


12146952
BLK

**12 WAY F METRI – PACK 280 SERIES
HEADLAMP DIMMER SWITCH**

420885277

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
B	WHT		156	COUTRESY LAMP
C	RED		42	BATTERY FUSED FEED
D	PNK		39	IGNITION FUSED FEED
E	DK GRN		44	INSTUMENT PANEL LAMPS DIMMER SWITCH
G	YEL		10	HEADLAMP SWITCH
H	ORN		240	BATTERY FUSED FEED
L	PPL		328	INTERIOR LAMP DEFEAT SWITCH
M	WHT		156	COURTESY LAMP
N	PPL/WHT		1382	LED DIMMING SIGNAL
R	BLK		150	GROUND
S	BRN		9	PARK LAMP



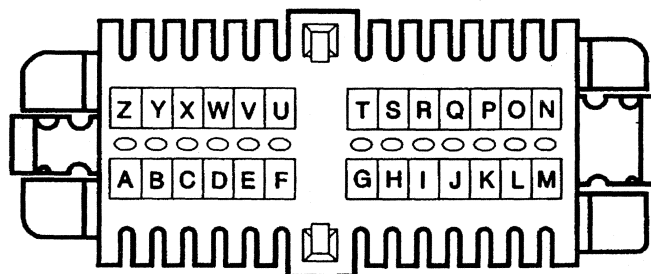
12047887
BLACK
EDGEBOARD SERIES
HVAC PROGRAMMER

4208S5275

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	LT BLU		733	AIR MIX DOOR POSITION SIGNAL
B	DK BLU		1199	AIR TEMPERATURE VALVE MOTOR - FEED
C	YEL		1649	BLOWER MOTOR ENABLE RELAY
D	LT BLU		920	REAR CONTROL OUTPUT
E	LT BLU		919	FRONT CONTROL HEAT INPUT
F	WHT		119	MODE SWITCH
H	BLK		150	GROUND
J	BRN		841	IGNITION FUSED FEED
K				
L	DK BLU		77	A/C SELECT SWITCH
M	ORN		1923	AUXILIARY HVAC SWITCH - FEED

HARNESS CONNECTOR FACES

12146397



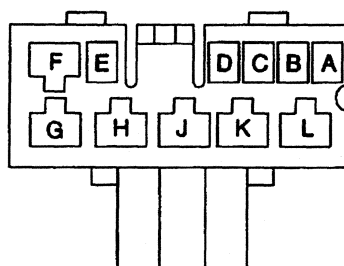
**BLACK
BOW SERIES
INSTRUMENT CLUSTER**

420855271

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
1	BRN		358	SIR INDICATOR LAMP
2	DK BLU		507	WAIT LAMP
3	LT BLU		14	TURN SIGNAL LAMP FEED - LEGT FRONT
4	BLK		150	GROUND
5	WHT		629	HIGH BEAM INDICATOR
5	LT GRN		11	HIGH BEAM HEADLAMP
6	WHT		121	TACHOMETER SIGNAL
7	PNK		39	IGNITION FUSED FEED
7	PNK		1020	MUX LEFT LOW BEAM
8	PPL/WHT		1382	LED DIMMING SIGNAL
9	BLK/WHT		771	TRANSMISSION POSITION SWITCH SIGNAL - BIT 1
10	GRY		773	TRANSMISSION POSITION SWITCH - BIT 3
11	YEL		772	TRANSMISSION POSITION SWITCH - BIT 2
12	WHT		776	TRANSMISSION POSITION SWITCH SIGNAL - PARITY BIT
13	DK GRN		35	COOLANT TEMPERATURE INDICATOR LAMP OUTPUT
14	DK GRN		389	VEHICLE SPEED SIGNAL - 4000 PULSES PER MILE
15	TAN		31	OIL PRESSURE INDICATOR LAMP OUTPUT
16	PPL		30	FUEL GAUGES SENSOR SIGNAL
17	LT GRN/BLK		592	DAYTIME RUNNING LIGHT RELAY OUTPUT - COIL
18	YEL/BLK		508	"WATER-IN-FUEL" INDICATOR SWITCH GROUND
19	BRN		25	CHARGE INDICATOR LAMP OUTPUT

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
20	TAN/BLK		456	SHIFT INDICATOR LAMP OUTPUT
21	WHT/BLK		176	FORE
22	PNK		39	IGNITION FEED
23	BRN/WHT		419	CHECK ENGINE INDICATOR LAMP OUTPUT
25	GRY		69	LOW COOLANT MODULE CONTROLLED GROUND
27	LT GRN		867	ABS FAILURE INDICATOR LAMP OUTPUT
28	TAN/WHT		33	BRAKE WARNING INDICATOR LAMP OUTPUT
29	GRY		8	INSTRUMENT PANEL LAMP FEED
30	YEL		234	SEAT BELT INDICATOR LAMP OUTPUT
31	BLK		150	GROUND
32	DK BLU		15	TURN SIGNAL LAMP FEED - RIGHT FRONT

HARNESS CONNECTOR FACES

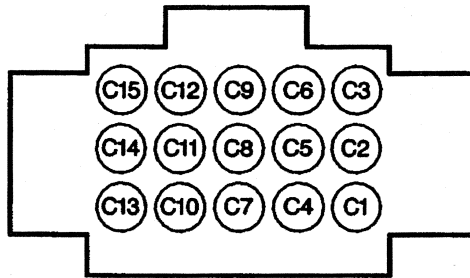


1208S4617
11 - WAY F METRI - PACK MIXED SERIES
BLK
LH POWER WINDOW AND DOOR LOCK SWITCH

4208S5272

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	BLK		150	GROUND
B	BLK		150	GROUND
C	LT BLU		195	POWER DOOR LOCK RELAY FEED - LOCK COIL
D	ORN		640	FUSE OUTPUT BATTERY TYPE III FUSE
E	WHT		194	POWER DOOR LOCK RELAY FEED - UNLOCK COIL
F	BLK		150	GROUND
J	BRN		9	PARK LAMP FEED
H				NOT USED
K				NOT USED
L	YEL		343	FUSE OUTPUT - ACCESSORY - TYPE III FUSE

12034325

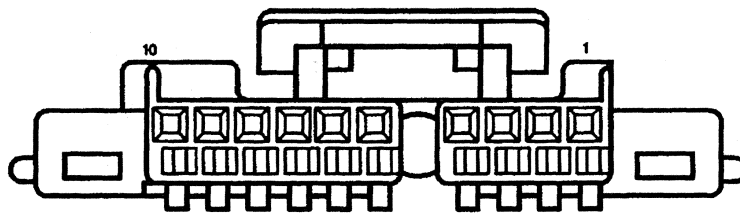


POWER AMPLIFIER

420854528

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
C1	DK BLU		46	SPEAKER FEED - RIGHT REAR
C2	LT BLU		115	SPEAKER RETURN - RIGHT REAR
C4	BRN		199	SPEAKER FEED - LEFT REAR
C5	YEL		116	SPEAKER RETURN - LEFT REAR
C6	TAN		1855	SPEAKER FEED - RIGHT REAR MIDRANGE
C12	WHT		1859	SPEAKER FEED - LEFT REAR MIDRANGE
C13	ORN		360	AMPLIFIER FEED
C14	BLK		150	GROUND
C15	WHT		1959	SPEAKER RETURN - LEFT REAR MIDRANGE

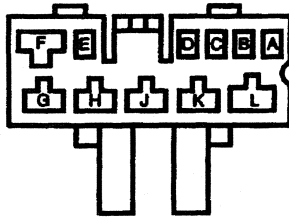
HARNESS CONNECTOR FACES



12047531
BLACK
MICRO - PACK 100
RADIO RECEIVER

42085276

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
1	GRY		118	SPEAKER RETURN - LEFT FRONT
2	TAN		201	SPEAKER FEED - LEFT FRONT
3	DK GRN		117	SPEAKER RETURN - RIGHT FRONT
4	LT GRN		200	SPEAKER FEED - RIGHT FRONT
5	BLK		150	GROUND
6	PPL/WHT		1382	LED DIMMING SIGNAL
7	GRY		8	INSTRUMENT PANEL LAMP FEED
9	YEL		43	FUSE OUTPUT- ACCESSORY - TYPE III FUSE
10	ORN		1140	FUSE OUT - BATTERY - TYPE III FUSE
15	DK GRN		835	E & C DIAGNOSTIC SIGNAL
16	DK GRN/WHT		817	VEHICLE SPEED SENSOR - 4000 PULSES
17	LT BLU		115	SPEAKER RETURN - RH REAR
18	DK BLU		46	SPEAKER FEED - RH REAR
19	YEL		116	SPEAKER RETURN - LH REAR
20	BRN		199	SPEAKER FEED - LH REAR



12084617

11 - WAY F METRI - PACK MIXED SERIES

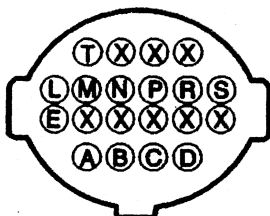
BLK

RH POWER WINDOW AND DOOR LOCK SWITCH

420855273

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	WHT		194	POWER DOOR LOCK RELAY FEED - UNLOCK COIL
B	LT BLU		195	POWER DOOR LOCK RELAY FEED - LOCK COIL
C	TAN		294B	POWER DOOR LOCK MOTOR FEED - UNLOCK
C	WHT		194	POWER DOOR LOCK RELAY FEED - UNLOCK
D	ORN		640	BATTERY FUSED FEED
D	ORN		540	FUSE OUTPUT - BATTERY TYPE III FUSE
E	LT BLU		195	POWER DOOR LOCK RELAY FEED - LOCK
E	GRY		295B	POWER DOOR LOCK MOTOR FEED - LOCK
F	DK BLU		1307	POWER WINDOW SWITCH - LOCKOUT
F	YEL		343	FUSE OUTPUT - ACCESSORY - TYPE III FUSE
G	DK BLU		666	POWER WINDOW MOTOR FEED RIGHT FRONT WINDOW - UP
J	LT BLU		166	POWER WINDOW MASTER SWITCH OUTPUT - RIGHT FRONT WINDOW - UP
K	BRN		667	POWER WINDOW MOTOR FEED RIGHT FRONT WINDOW - DOWN
L	TAN		167	POWER WINDOW MASTER SWITCH OUTPUT - RIGHT FRONT WINDOW - DOWN

HARNESS CONNECTOR FACES



12160491 - 90° SLEEVE

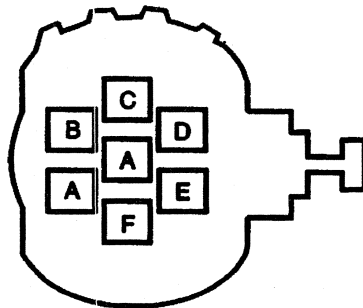
12160492

20-WAY F MICRO-PACK 100W SERIES
GRY

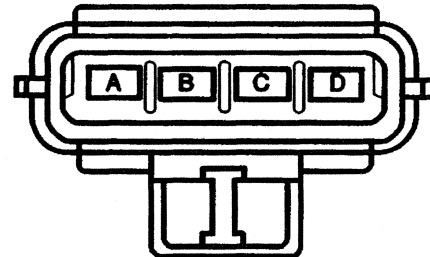
TRANSMISSION

420884624

CAVITY	WIRE COLOR	WIRE SIZE	CKT	DESCRIPTION
A	LT GRN		1222	1-2 SHIFT SOLENOID CONTROL CIRCUIT
B	YEL/BLK		1223	2-3 SHIFT SOLENOID CONTROL CIRCUIT
C	RED/BLK		1228	PRESSURE CONTROL SOLENOID (HIGH)
D	LT BLU/WHT		1229	PRESSURE CONTROL SOLENOID (LOW)
E	PNK/BLK		839	BOTH SHIFT SOLENOIDS AND TCC SOLENOID IGNITION FEED CIRCUIT
E	PNK		1020	FUSE FEED
L	BLK/YEL		1227	TRANSMISSION FLUID TEMPERATURE (TFT) SIGNAL CIRCUIT
M	BLK		452	TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR GROUND CIRCUIT
M	BLK		470	SENSOR GROUND
N	PNK		1224	RANGE SIGNAL "A" CIRCUIT
P	RED		1226	RANGE SIGNAL "C" CIRCUIT
R	DK BLU		1225	RANGE SIGNAL "B" CIRCUIT
S	DK BLU		1350	TCC PWM SOLENOID CONTROL CIRCUIT
S	WHT		687	SHIFT SOLENOID OUTPUT - 2/3
S	BRN		418	TCC SOLENOID OUTPUT - PWM
T	TAN/BLK		422	TCC SOLENOID OUTPUT
U	BRN		418	TCC SOLENOID OUTPUT - PWM

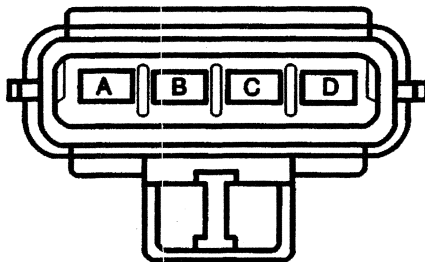
C102

12110751
BLACK
7 WAY METRI - PACK 280 - SERIES
FORWARD LAMP HARN TO I/P HARN

C120

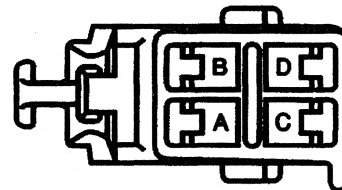
12129565
4 - WAY F METRI - PACK 280 SERIES
GRY

ENGINE HARN TO FOUR WHEEL DRIVE INDICATOR
FRONT DRIVE AXLE CLUTCH ACTUATOR SOLENOID

C103

12129565
4 - WAY F METRI - PACK 280 SERIES
GRY
ENGINE HARN TO FUEL PUMP MOTOR

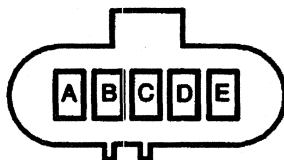
C212
C237
C302



12129136
BLACK
4 WAY METRI - PACK 280 - SERIES

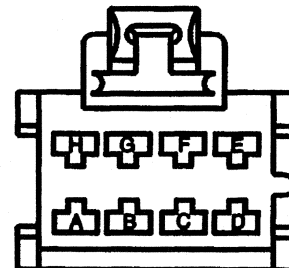
POWERSEAT TO CROSS BODY HARN
REAR BODY HARN TO CROSS BODY HARN
BODY HARN TO CROSS BODY HARN
CARGO LAMP SWITCH
ENDGATE RELEASE SWITCH

C104
C105



12085037
5 WAY M METRI - PACK 280 SERIES
GRY

I/P HARN TO REAR LAMP HARN

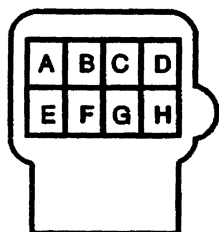
C230

12064998
8 - WAY F METRI - PACK 280 SERIES
BLK

I/P HARN TO HVAC
REAR WINDOW WIPER WASHER SWITCH

HARNESS CONNECTOR FACES

C300

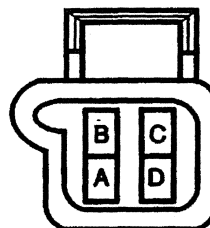


12089906

8-WAY M METRI-PACK 150 SERIES
BLU

REAR BODY HARN TO AUX. A/C SWITCH

C410

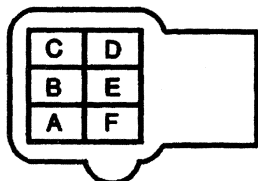


12124405

4-WAY M METRI-PACK 150 SERIES
BLK

CROSS BODY HARN TO REAR SPEAKERS HARN

C401

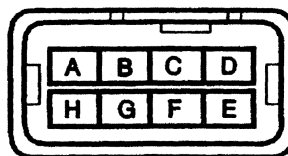


12089892

6-WAY M METRI-PACK 150 SERIES
GRY

REAR BODY HARN TO AUX. A/C SWITCH HARN

C411

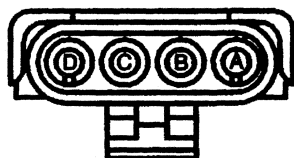


12059558

8-WAY M METRI-PACK 150 SERIES
BLK

CROSS BODY HARN TO CARGO LAMP HARN

C409

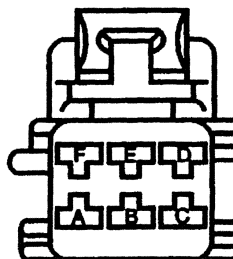


12015797

4-WAY M/F WEATHER PACK TWR
BLK

REAR BODY HARN TO REAR BODY JUMPER HARN

C496
C498

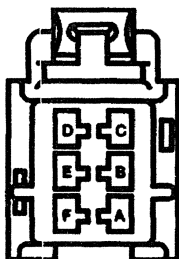


12064762

6-WAY F METRI-PACK 150 SERIES
GRY

RH REAR DOOR HARN TO CROSS BODY HARN
LH REAR DOOR HARN TO CROSS BODY HARN

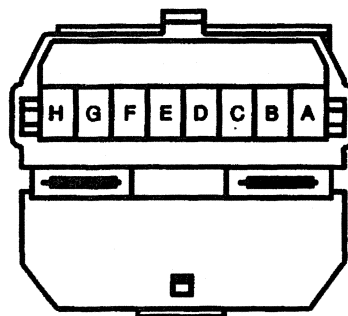
C497
C498



12064752

6-WAY F METRI - PACK 280 SERIES
BLK

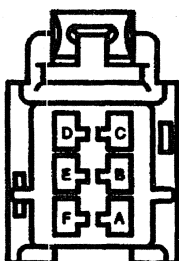
RH REAR DOOR HARN TO CROSS BODY HARN
LH REAR DOOR HARN TO CROSS BODY HARN



12015308

8-WAY PC EDGEBOARD - STD
BLK

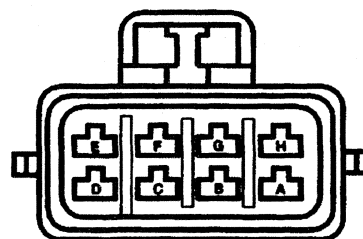
DRL MODULE



12064752

6-WAY F METRI - PACK 280 SERIES
BLK

HEATER & A/C CONTROL SELECT SW (C2)
STOP LAMP & TCC SWITCH JUMPER
AUX FAN CONTROL SW



12047937

8-WAY F METRI - PACK 150 SERIES
BLK

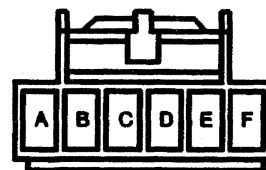
ENGINE HARN TO ENGINE DATA SENSORS



12103419

4-WAY M/F WEATHER PACK TWR
BLK

BLOWER MOTOR CONTROL MODULE
IDLE AIR CONTROL VALVE

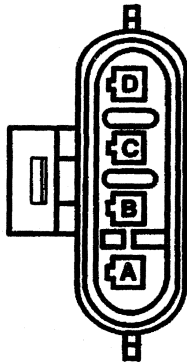


12004706

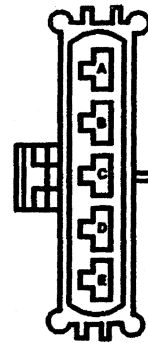
6-WAY PC EDGEBOARD - STD
BLK

ENGINE COOLANT LEVEL INDICATOR MODULE

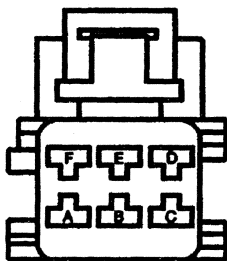
HARNESS CONNECTOR FACES



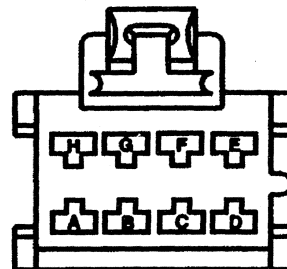
12047950
BLACK
METRI - PACK 150
EURV SOLENOID



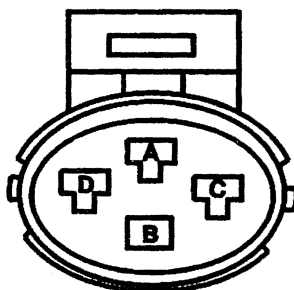
12045636
METRI - PACK 280 SERIES
GLOW PLUG CONTROLLER



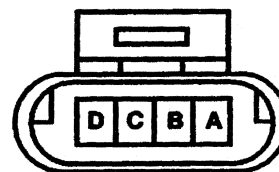
12064762
GRAY
METRI - PACK 150
FOG LAMP SWITCH



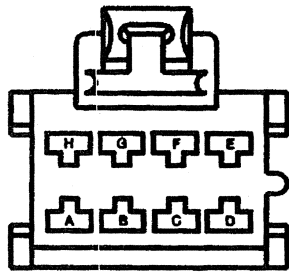
12064998
BLACK
METRI - PACK 280
HEATER & A/C CONTROL SELECT SW (C1)



12065401
GRAY
METRI - PACK 150
FUEL PUMP OIL PRESSURE SWITCH



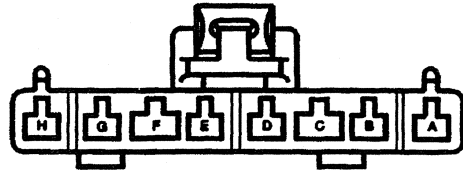
12162189
BLACK
METRI - PACK 150
IDLE AIR CONTROL VALVE
DIST. IGNITION CONTROL MODULE



12064998

8-WAY F METRI-PACK 280 SERIES
BLK

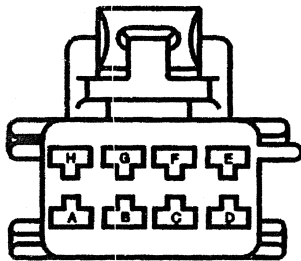
KEYLESS ENTRY MODULE (C1)



12084603

8-WAY F METRI-PACK MIXED SERIES
MED GRY

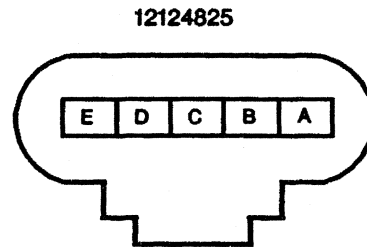
LH DOOR MASTER POWER WINDOW SWITCH



12064766

8-WAY F METRI-PACK 150 SERIES
BLU

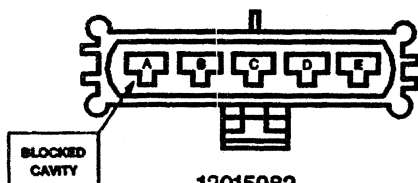
KEYLESS ENTRY MODULE (C2)



12124825

GRAY

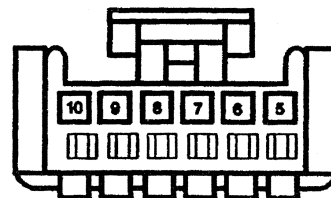
LINEAR EGR VALVE



12015982

4-WAY F METRI-PACK 280 SERIES
BLK

KNOCK SENSOR MODULE

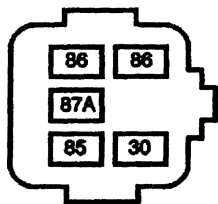


12040953

6-WAY F MICRO-PACK
BLK

MODE DOOR MOTOR

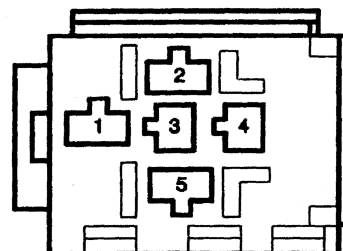
HARNESS CONNECTOR FACES



12110539

5 - WAY F METRIC - PACK 150 SERIES
BLK

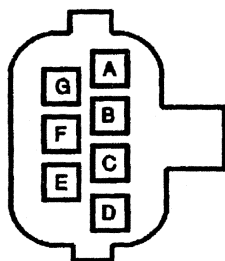
TRANSFER CASE SHIFT CONTROL RELAY



12033871

5 - WAY F METRI - PACK 630 SERIES
BLK

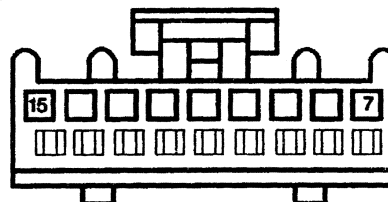
TURN SIGNAL LAMP FLASHER



12129840

7 - WAY METRI - PACK 150 SERIES
GRY

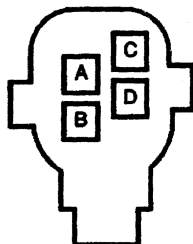
TRANSMISSION RANGE SWITCH (C1)



12066130

9 - WAY F MICRO - PACK 100 SERIES
NAT

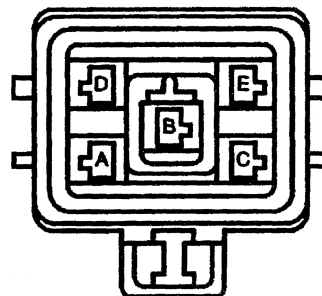
VEHICLE SPEED SENSOR BUFFER



12129804

4 - WAY METRI - PACK 150 SERIES
GRY

TRANSMISSION RANGE SWITCH (C2)



12052813

5 - WAY F METRI - PACK 280 SERIES
BLK

WINDSHIELD WIPER MOTOR