

INTRODUCTION

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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.

Harness Routing Views are found in SECTION 8A-203. These views show the routing of the major wiring harnesses and the in-line connectors between the major harnesses.

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

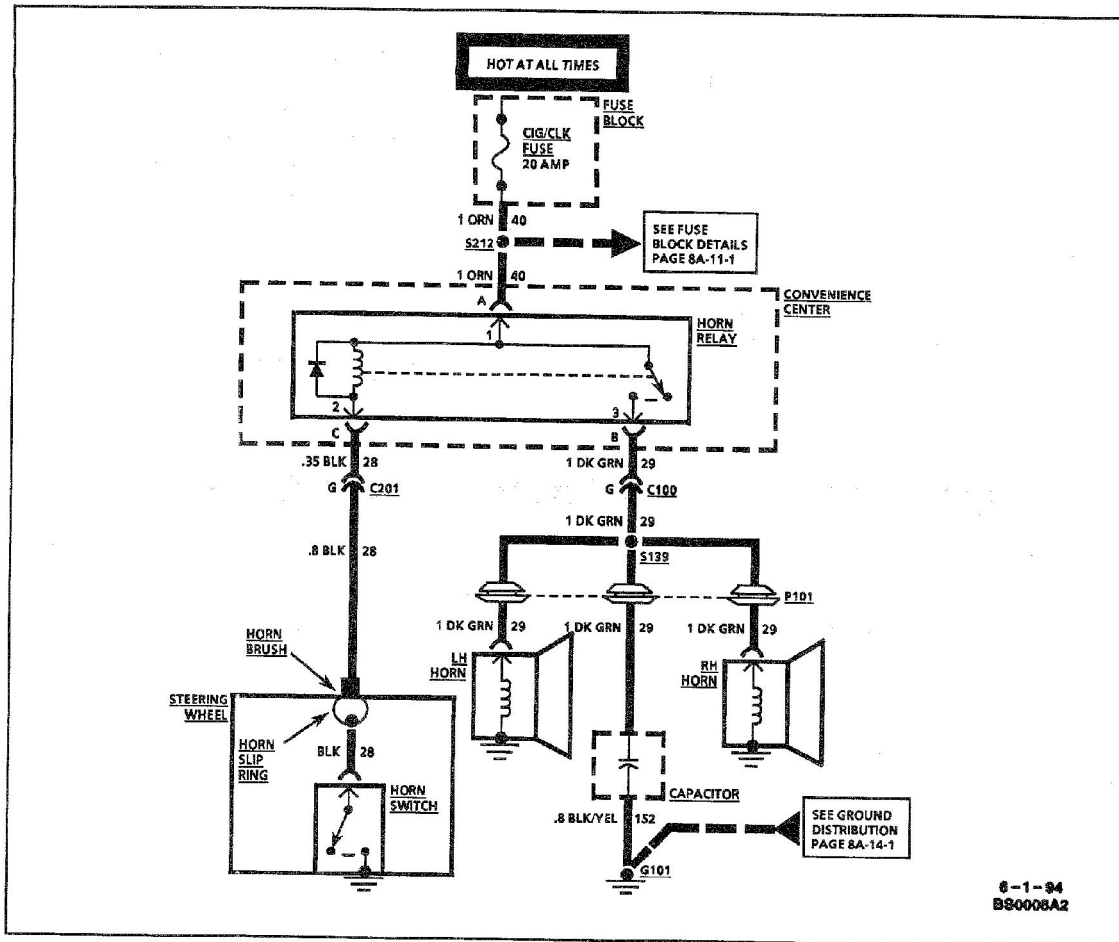


Figure 1—Typical Horn Schematic

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.

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.

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INTRODUCTION

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 I/P." Reference to LH and RH is made as though 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.

Typical Entries in the Component Location List

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
GROUNDS				
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

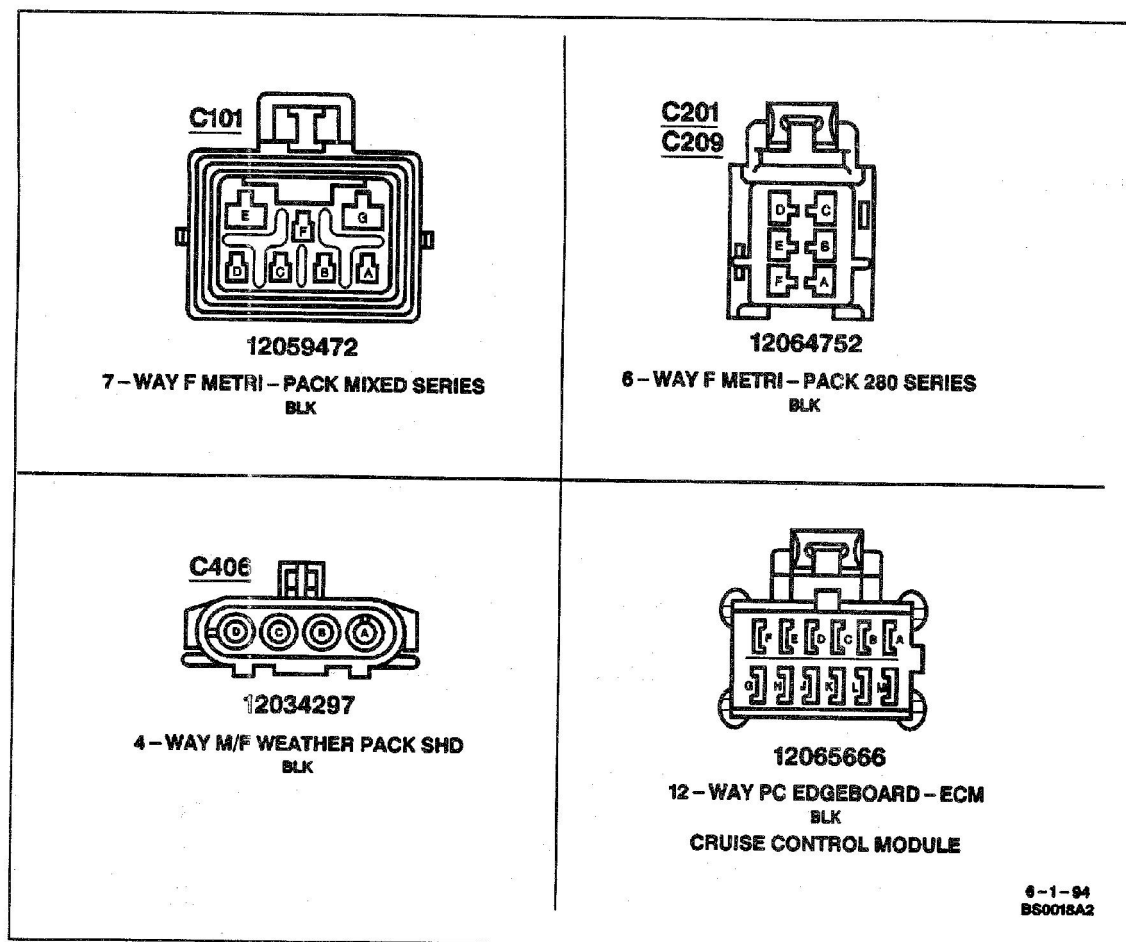


Figure 3—Typical Harness Connector Faces

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.

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.

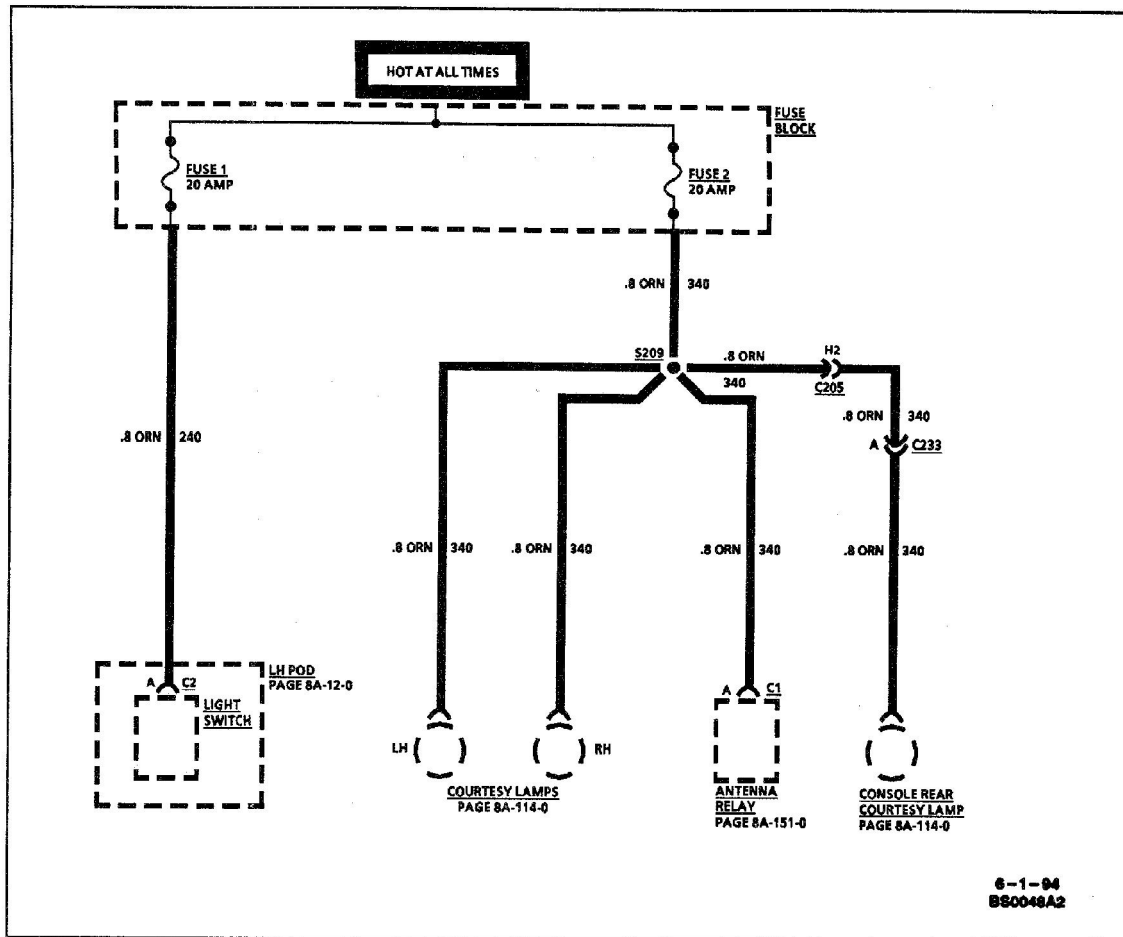


Figure 5—Typical Fuse Block Details Schematic

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.

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.

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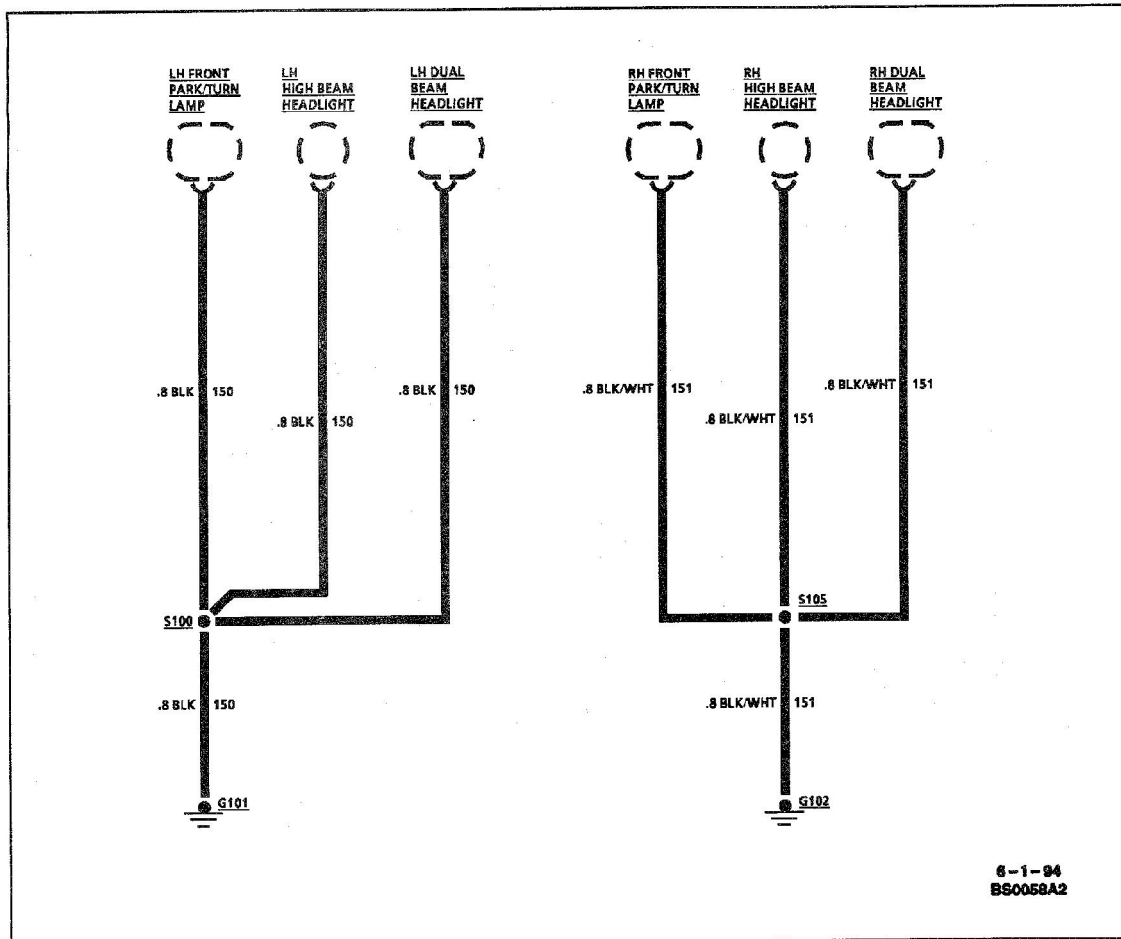


Figure 6—Typical Ground Distribution Schematic

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.

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