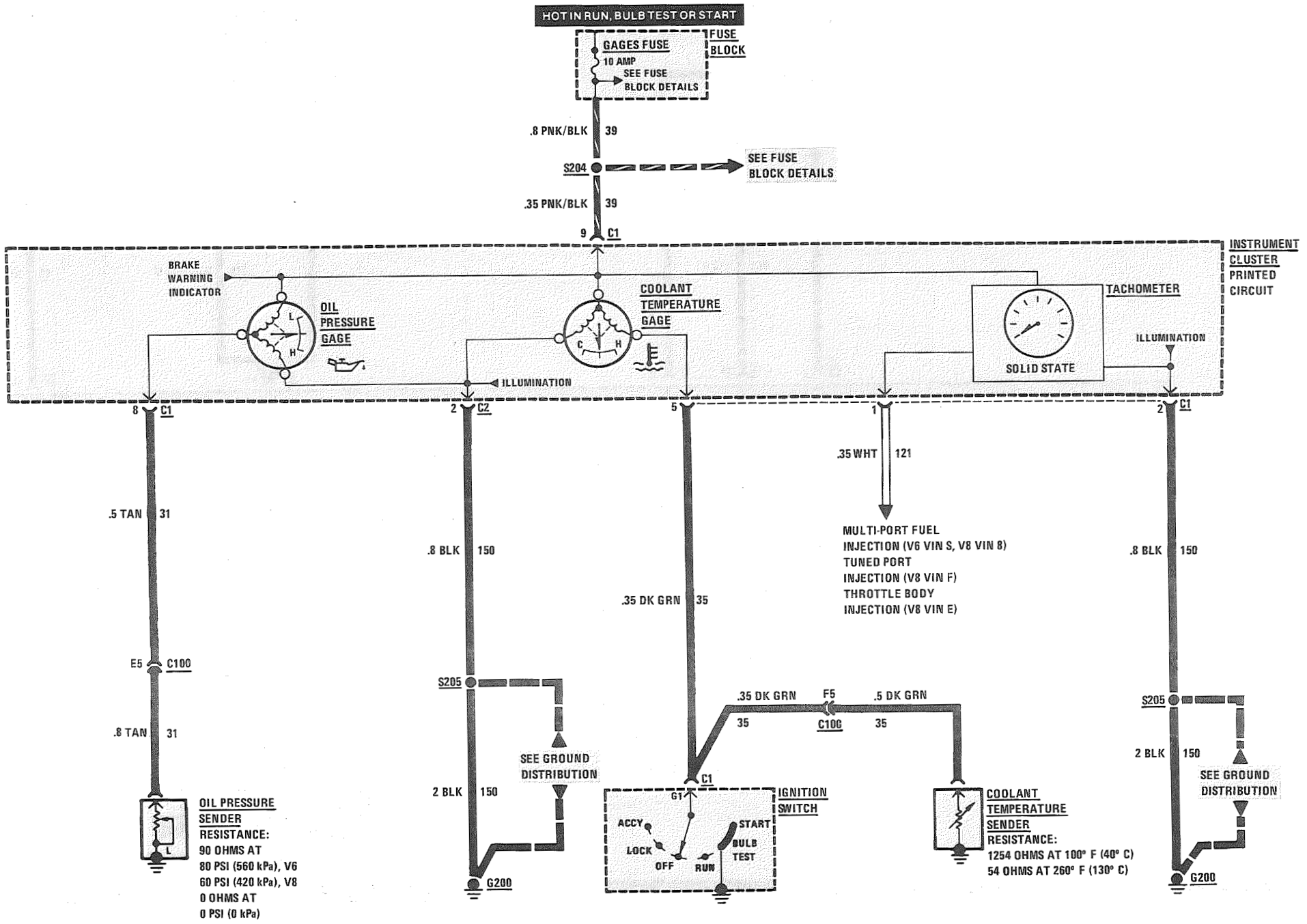
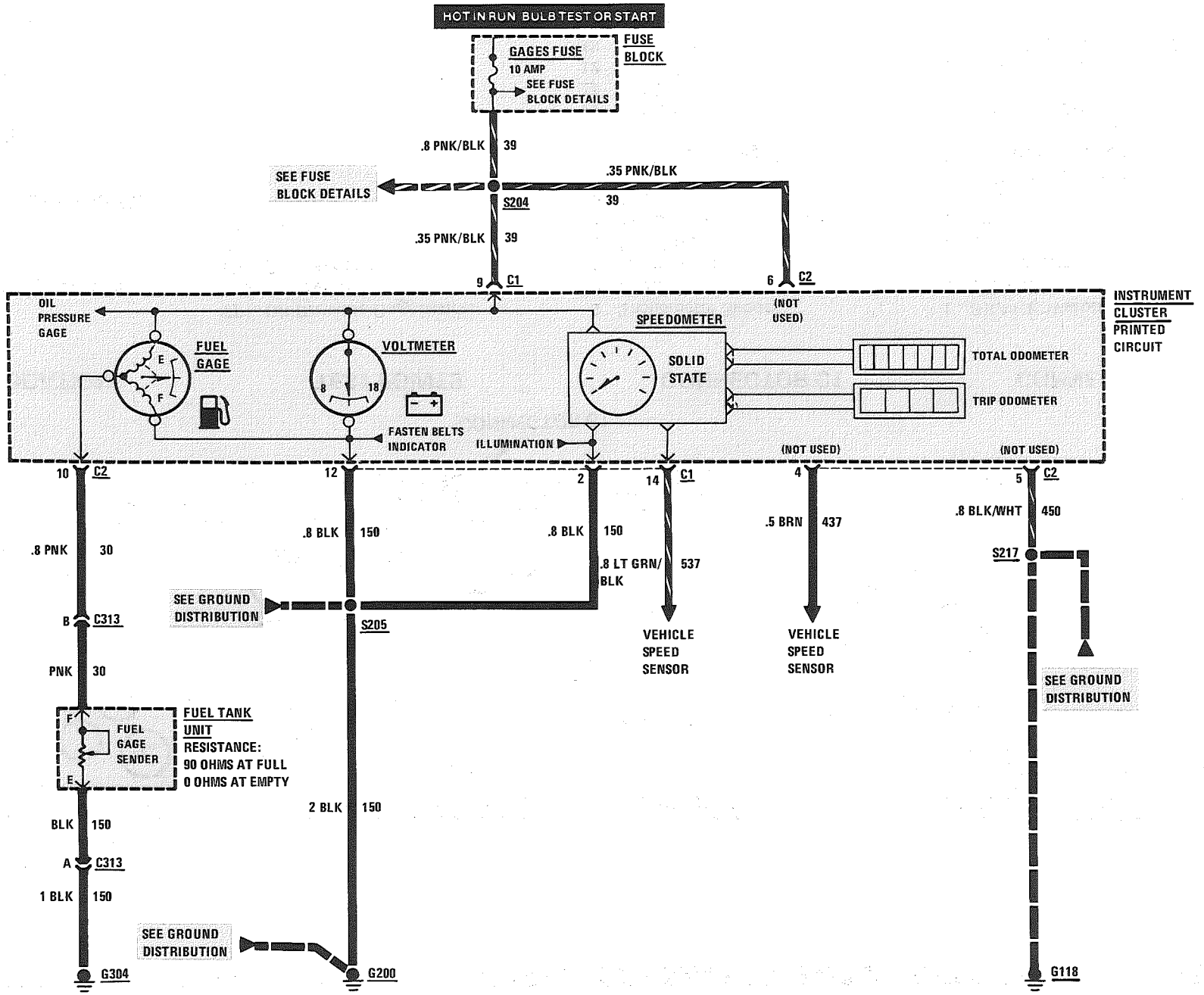
INSTRUMENT PANEL: GAGES CLUSTER

GAGES TACHOMETER



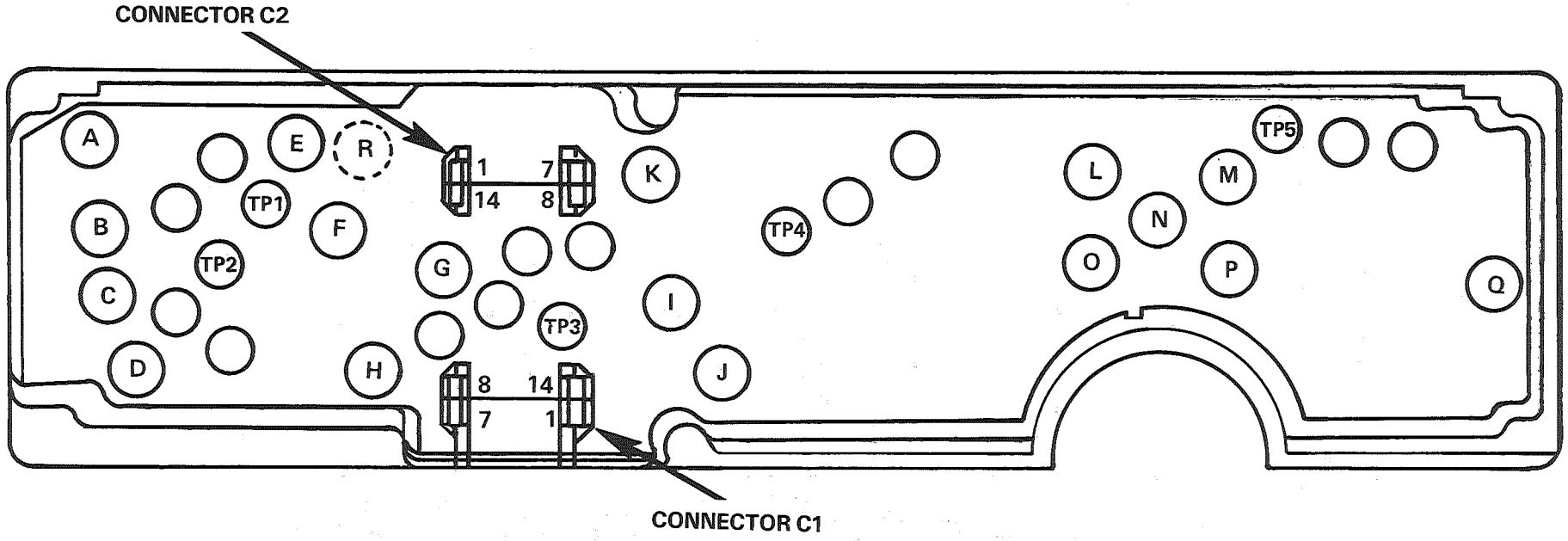
INSTRUMENT PANEL: GAGES CLUSTER

GAGES, SPEEDOMETER



INSTRUMENT PANEL: GAGES CLUSTER

CLUSTER REAR VIEW



BULB LOCATIONS

A Illumination
B BRAKE Warning Indicator
C Not Used
D Illumination
E Illumination
F SERVICE ENGINE SOON Indicator
G Not Used
H Illumination
I Fasten Belts Indicator
J Illumination
K Illumination
L RH Turn Indicator
M LH Turn Indicator
N Hi Beam Indicator
O Illumination
P Illumination
Q Illumination
R SHIFT Indicator

TEST POINTS

TP1 Oil Pressure Gage Sender
TP2 Temperature Gage Sender
TP3 Fuel Gage Sender
TP4 Tachometer Sender
TP5 Speed

CONNECTOR C1

1 Tachometer Sender
2 Ground
3 Illumination
4 Not Used
5 Temperature Gage Sender
6 Not Used
7 Open
8 Oil Pressure Gage Sender
9 Ignition
10 Not Used
11 Not Used
12 Ground
13 Fasten Belts
14 Speedometer

CONNECTOR C2

1 BRAKE Warning Indicator
2 Ground
3 Illumination
4 Open
5 Open
6 Open
7 LH Turn Indicator
8 Hi Beam Indicator
9 RH Turn Indicator
10 Fuel Gage Sender
11 Not Used
12 470Ω to Generator
13 SERVICE ENGINE SOON Indicator
14 SHIFT Indicator

TROUBLESHOOTING HINTS

- **For a list of possible symptoms, go to System Diangosis.**
- **For Instrument Cluster removal and replacement procedures, see Section 8C of the Service Manual.**
- **Try the following checks before doing the System Check.**

1. Check GAGES Fuse by observing the BRAKE Warning Indicator with the Ignition Switch in RUN and the Park Brake applied.
2. Check ground G200.
3. Check case ground of Coolant Temperature Sender.
4. Check case ground of Oil Pressure Sender.
5. Check Indicator bulbs.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation. Refer to the diagnosis given if other results occur.**
- **Tests follow in System Diagnosis.**

COMPONENT LOCATION

		Page-Figure
Coolant Temperature Sender (VIN E)	Lower LH side of engine	201- 3-A
Coolant Temperature Sender (VIN F) (VIN 8)	Lower LH side of engine	201- 8-A
Coolant Temperature Sender (VIN S)	Top LH front of engine, behind A/C Compressor	201- 0-B
Fuel Tank Unit	Top center of fuel tank	201- 9-C
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Ignition Switch	Behind I/P, on top side of steering column	201- 9-A
Oil Pressure Sender (VIN E)	Top rear of engine, near distributor	201- 3-C
Oil Pressure Sender (VIN F) (VIN 8)	Top rear of engine, near distributor	201- 7-C
Oil Pressure Sender (VIN S)	Lower LH side of engine	201- 0-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C313 (3 cavities)	Below center of back seat	201- 9-C
G118 (VIN F) (VIN 8)	Rear of RH cylinder head	201- 5-A
G118 (VIN S)	Rear of RH cylinder head	201- 1-C
G200	Behind I/P, left of steering column	201-10-A
G304	Under rear seat, on support bracket	
S204	I/P harness, behind instrument cluster	201-10-A
S205	I/P harness, behind instrument cluster	201-10-A
S217	I/P harness, behind center of I/P	201-10-A

SYSTEM CHECK TABLE

ACTION	CORRECT RESULT	FOR DIAGNOSIS OF INCORRECT RESULTS
Turn the Ignition Switch to RUN	SERVICE ENGINE SOON Indicator lights	See Section 6E of Service Manual
	FASTEN BELTS Indicator lights for 6 to 8 seconds	See Warnings and Alarms (Section 8A-75)
	Fuel Gage indicates correct fuel level	See Symptom Table
	Oil Pressure Gage indicates low oil pressure	See Symptom Table
	Coolant Temperature Gage indicates engine temperature	See Symptom Table
	Voltmeter indicates Battery Voltage	Do Test L
Turn the Ignition Switch to BULB TEST	Coolant Temperature Gage indicates hot	See Symptom Table
With Ignition Switch in RUN, apply the Park Brake	BRAKE Warning Indicator lights	See Brake Warning System (Section 8A-41)
With Ignition Switch in RUN, turn the Headlights and Hi Beams on	Hi Beam Indicator lights	See Headlights (Section 8A-100)
With Ignition Switch in RUN and lights still on, adjust the Instrument Cluster dimmer control	Instrument Cluster illumination varies as control is adjusted	See Interior Lights (Section 8A-117)
With Ignition Switch in RUN, operate Turn signals	LH and RH Turn Indicators light	See Exterior Lights (Section 8A-110)
Start the Engine	Tachometer indicates engine RPM	Do Test M
	Oil Pressure Gage indicates engine oil pressure	See Symptom Table

- **Go to System Diagnosis for a list of symptoms.**

SYSTEM DIAGNOSIS

- **Do the tests listed for your symptom in the Symptom Table below, or when directed by the System Check.**
- **For Instrument Cluster removal and replacement procedures, see Section 8C of the Service Manual.**
- **Tests follow the Symptom Table.**

SYMPTOM TABLE

SYMPTOM	FOR DIAGNOSIS
Fuel Gage indicates EMPTY when there is fuel in the tank	Do Test C: (Also see Test B terminal 10)
Fuel Gage indicates FULL or beyond at all times	Do Test D: (Also see Test B terminal 10)
Fuel Gage is inaccurate	Do Test E: (Also see Test B terminal 10)
Coolant Temperature Gage indicates HOT with engine coolant cool and Ignition Switch in RUN	Do Test F (Also see Test B terminal 2)
Coolant Temperature Gage indicates COLD at all times	Do Test G: (Also see Test B terminal 2)
Coolant Temperature Gage is inaccurate	Do Test H: (Also see Test B terminal 2)

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Coolant Temperature Gage does not indicate HOT with Ignition Switch in START or BULB TEST, but does operate accurately	Check DK GRN (35) wire and Ignition Switch for opens Repair/replace as necessary
Oil Pressure Gage indicates low pressure and oil pressure is good	Do Test I: (Also see Test A terminal B)
Oil Pressure Gage indicates high pressure at all times and oil pressure is good	Do Test J: (Also see Test A terminal 8)
Oil Pressure Gage is inaccurate	Do Test K: (also see Test A terminal 8)
Voltmeter is inaccurate	Do Test L
Tachometer does not operate	Do Test M
Speedometer/ Odometer is inaccurate	Do Test N: (with J-33431-873 harness connector available)
One or both Odometers do not operate properly, but Speedometer operates accurately	Check the Instrument Cluster Printed Circuit for cracks or flaws Replace the Speedometer/ Odometer Assembly

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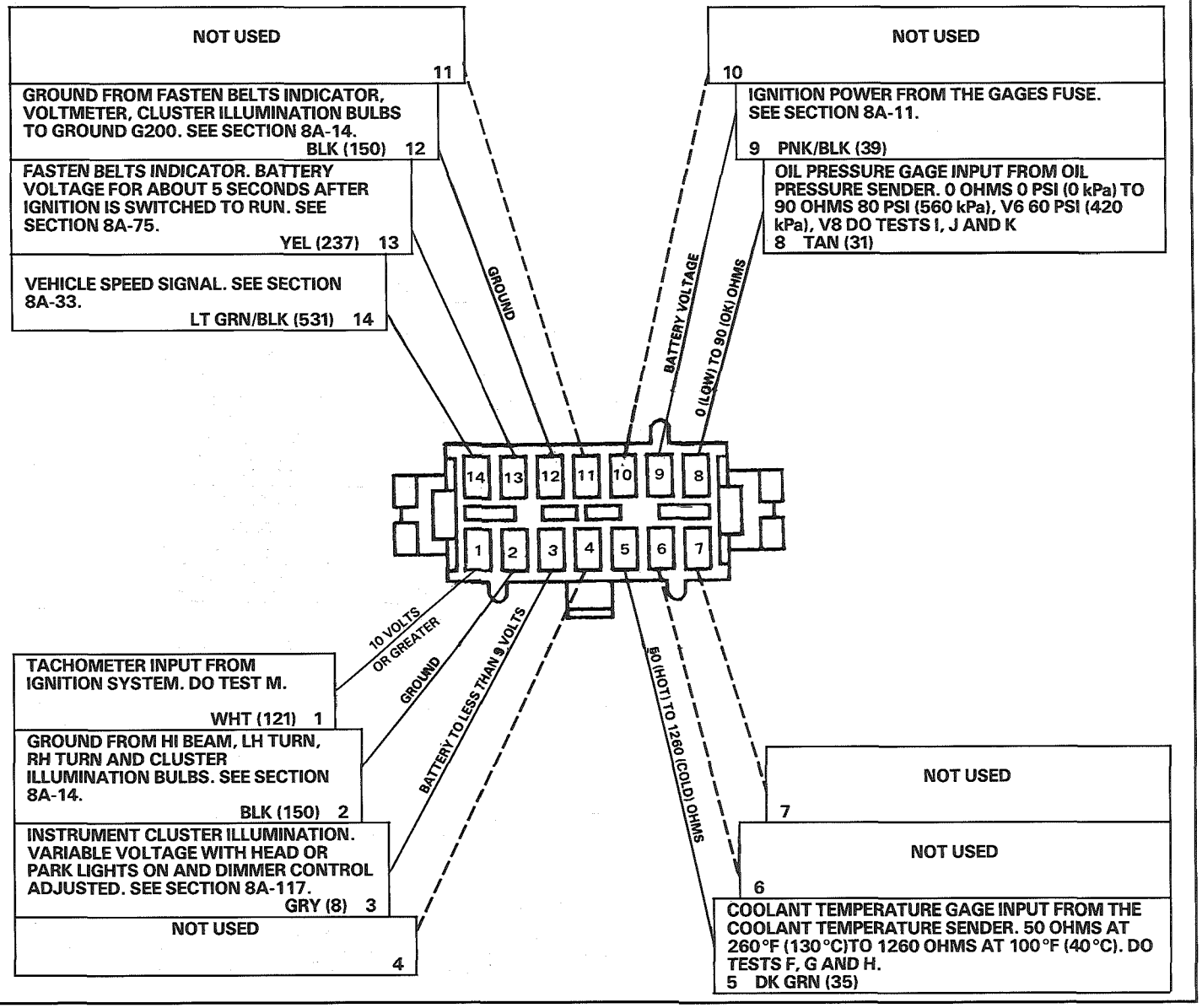
Hi Beam Indicator does not operate properly	See Exterior lights Section 8A-110 (Also see Test B terminal 8)
Seatbelt Indicator and alarm do not operate properly	See Warnings and Alarms (see Index) (Also see Test A terminal 13)
BRAKE Warning Indicator does not work properly	See Brake Warning System, Section 8A-41 (Also, see Test A terminal 1)
SERVICE ENGINE SOON Indicator does not work properly	See Section 6E of Service Manual
Upshift Indicator does not work properly	Do Test O
Turn Indicators do not operate properly	See Exterior Lights, Section 8A-110 (Also, see Test B terminals 7 and 9)

INSTRUMENT PANEL: GAGES CLUSTER

A: CONNECTOR C1 PINOUT TEST

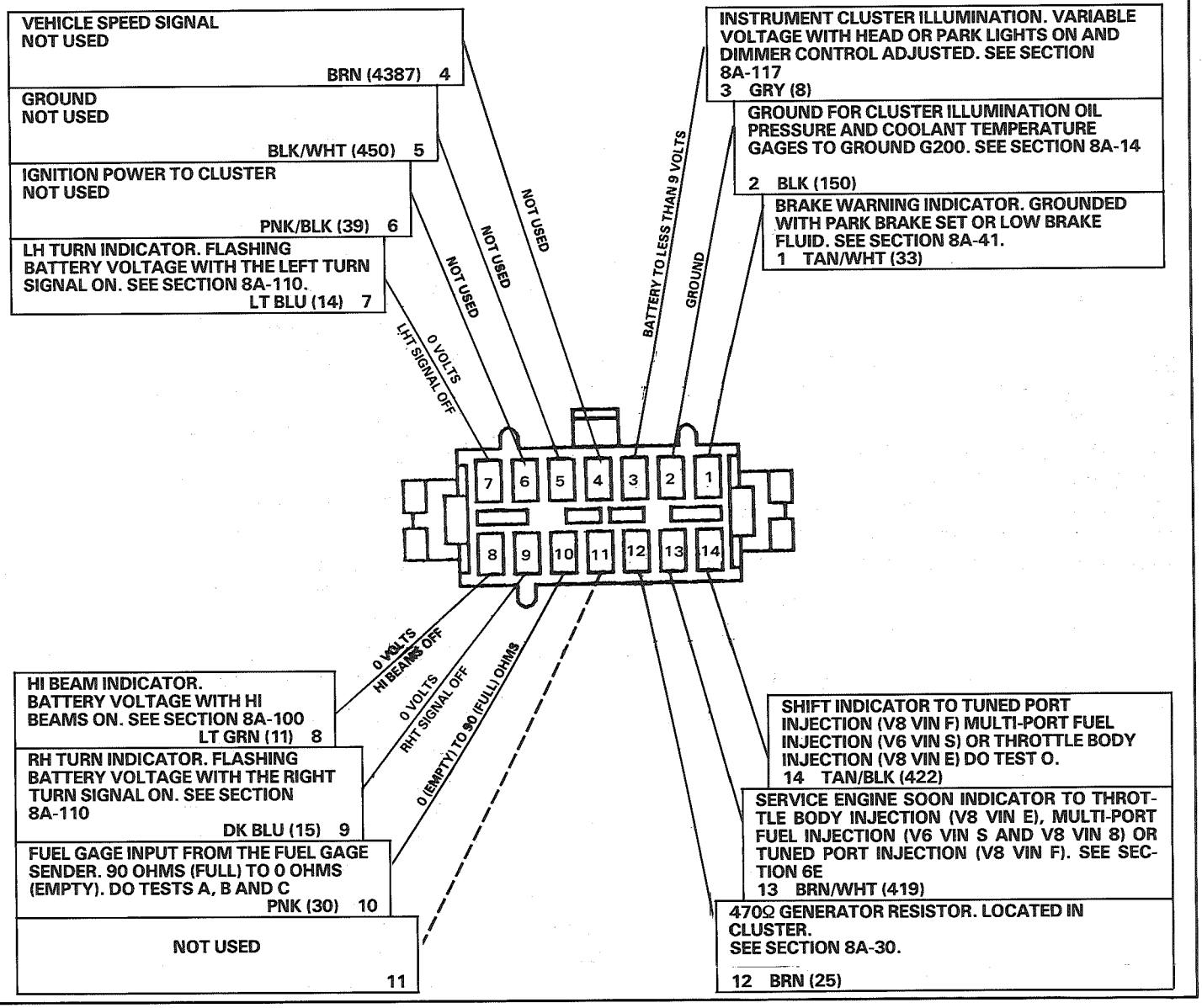
- IGNITION SWITCH IN RUN EXCEPT FOR RESISTANCE MEASUREMENTS
- MEASURE TO GROUND UNLESS ANOTHER TERMINAL IS GIVEN
- CLUSTER CONNECTOR C1 AS SEEN FROM THE DRIVER'S SEAT WITH THE INSTRUMENT CLUSTER REMOVED
- IF THE CORRECT VOLTAGE OR RESISTANCE IS FOUND AT THE TERMINALS, AND THE CLUSTER FUNCTION THAT USES THOSE TERMINALS DOES NOT OPERATE, CHECK WIRES, BULBS, AND PRINTED CIRCUIT. IF OK, REPLACE EITHER THE GAGE OR THE INSTRUMENT CLUSTER (SEE SECTION 8C)
- IF THE CORRECT VOLTAGE OR RESISTANCE IS NOT FOUND AT A TERMINAL, DO THE TEST GIVEN OR GO TO THE PAGE REFERRED



INSTRUMENT PANEL: GAGES CLUSTER

B: CONNECTOR C2 PINOUT TEST

- IGNITION SWITCH IN RUN EXCEPT FOR RESISTANCE MEASUREMENTS
- MEASURE TO GROUND UNLESS ANOTHER TERMINAL IS GIVEN
- CLUSTER CONNECTOR C2 AS SEEN FROM THE DRIVER'S SEAT WITH THE INSTRUMENT CLUSTER REMOVED
- IF THE CORRECT VOLTAGE OR RESISTANCE IS FOUND AT THE TERMINAL, AND THE CLUSTER FUNCTION THAT USES THOSE TERMINALS DOES NOT OPERATE, CHECK WIRES, BULBS, AND PRINTED CIRCUIT. IF OK, REPLACE EITHER THE GAGE OR THE INSTRUMENT CLUSTER (SEE SECTION 8C)
- IF THE CORRECT VOLTAGE OR RESISTANCE IS NOT FOUND AT A TERMINAL, DO THE TEST GIVEN OR GO TO THE PAGE REFERRED



C: FUEL GAGE ALWAYS INDICATES FULL

Disconnect the Fuel Tank Sender Unit connector. Turn Ignition Switch to RUN.

- If the Fuel Gage now indicates FULL, repair/replace Fuel Gage Sender.
- If the Fuel Gage still indicates EMPTY, check PNK (30) wire (see schematic) for a short to ground. Check the Instrument Cluster Printed Circuit for flaws and the gage connections. Replace Fuel Gage if the PNK (30) wire, Printed Circuit, and gage connections are OK, (see Section 8C).

D: FUEL GAGE ALWAYS INDICATES EMPTY

Connect: FUSED JUMPER
At: FUEL TANK SENDER UNIT CONNECTOR (HARNESS HALF) (Disconnected)
Condition:
- **Ignition Switch: RUN**

Jumper Between	Correct Result	For Diagnosis
B (PNK) & Ground	Fuel Gage reads EMPTY	See 1
B (PNK) & A (BLK)	Fuel Gage reads EMPTY	See 2

- If results are correct, replace Fuel Gage Sender and its wires.

1. Check/repair PNK (30) wire (see schematic) for an open. Check Instrument Cluster Printed Circuit for flaws and for clean and tight Fuel Gage connections. Replace Fuel Gage if the above checks are OK (see Section 8C).
2. Check BLK (150) wire for an open to ground.

E: FUEL GAGE ACCURACY TEST

Disconnect the Fuel Tank Sender Unit connector and connect one red lead of J-33431 tester to terminal B (PNK) and the other to terminal A (BLK) of the harness half of the connector. Set the resistance dials of the tester to 0 ohms, 44 ohms and then to 90 ohms. The Fuel Gage should read E, ½ and then F.

- If Fuel Gage responds correctly, replace Fuel Gage Sender and its wires.
- If Fuel Gage does not respond correctly, check PNK (30) wire to the Instrument Cluster Printed Circuit and BLK (150) wire for high resistance. Also, inspect the Printed Circuit for proper mating of connectors. Replace the Fuel Gage if the wires and Printed Circuit are good.

F: COOLANT TEMPERATURE GAGE ALWAYS INDICATES HOT

Disconnect the Coolant Temperature Sender connector and place Ignition Switch in RUN.

- If Coolant Temperature Gage reads cold, replace the Coolant Temperature Sender.
- If the Coolant Temperature Gage does not read cold check DK GRN (35) wires and Ignition Switch, terminal G1 of connector C1 for a short to ground (see schematic). Replace the Coolant Temperature Gage if all are good (see section 8C).

G: COOLANT TEMPERATURE GAGE ALWAYS INDICATES COLD

Disconnect the Coolant Temperature Sender connector and jumper the DK GRN (35) wire to ground. Put the Ignition Switch in RUN.

- If the Coolant Temperature Gage reads hot, replace the Coolant Temperature Sender.
- If the Coolant Temperature Gage does not read hot, check DK GRN (35) wire for an open. Replace the Coolant Temperature Gage if the wire is good (see Section 8C).

H: COOLANT TEMPERATURE GAGE ACCURACY TEST

Disconnect the Coolant Temperature Sender connector. Connect one red clip lead of the J-33431 tester to the harness connector DK GRN (35) wire and the other red clip lead to ground. Adjust the resistance dials of the tester to 1254 ohms, 697 ohms and then to 54 ohms. The Coolant Temperature Gage should show 100 °F (40 °C), 220 °F (100 °C) and then 260 °F (130 °C).

- If the gage reads correctly, the wiring and gage are good. Replace the Coolant Temperature Sender.
- If the gage is not correct check DK GRN (35) wire and Printed Circuit. If they are good, replace the Coolant Temperature Gage (see Section 8C).

I: OIL PRESSURE GAGE ALWAYS INDICATES ZERO

Disconnect: CONNECTOR
At: OIL PRESSURE SENDER
Condition:
- **Ignition Switch: RUN**

Action	Correct Result	For Diagnosis
Disconnect Oil Pressure Sender connector	Oil Pressure Gage shows high pressure	See 1

- If the result is correct, replace the Oil Pressure Sender.

1. Check TAN (31) wire to Instrument Cluster for a short to ground. Check Instrument Cluster Printed Circuit for cracks or flaws. Repair/replace the Oil Pressure Gage if the wire and Printed Circuit are OK (see Section 8C).

J: OIL PRESSURE GAGE ALWAYS INDICATES HIGH PRESSURE

Connect: FUSED JUMPER
At: OIL PRESSURE SENDER CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Jumper Between	Correct Result	For Diagnosis
TAN & Ground	Oil Pressure Gage shows low pressure	See 1

- If the result is correct, replace the Oil Pressure Sender.

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1. Check TAN (31) wire and Instrument Cluster Printed Circut for an open. If wire and Printed Circuit are OK, repair/replace the Oil Pressure Gage (see Section 8C).

K: OIL PRESSURE GAGE ACCURACY TEST

Disconnect the Oil Pressure Sender. Connect one red clip of the J-33431 tester to the harness connector, TAN (31) wire, and connect the other red clip lead to ground. Set the resistance dials of the sender to 0 ohms, 43 ohms and then to 90 ohms. The Oil Pressure Gage should read 0 psi (0 kPa), 40 psi (280 kPa) and 80 psi (660 kPa) with the V6 or 0 psi (0 kPa), 30 psi (210 kPa) and 60 psi (420 kPa) with the V8.

- If the gage reads correctly, replace the Oil Pressure Sender.
- If the gage does not read correctly, check the TAN (31) wire and Printed Circuit. If they are good, replace the Oil Pressure Gage (see Section 8C).

L: VOLTMETER TEST

With the Ignition Switch in RUN, connect a Voltmeter between the positive and negative terminals of the Battery.

- If the voltage reading on the test voltmeter is approximately the same as the car's Voltmeter, the car's Voltmeter is OK.
- If the voltage reading on the test voltmeter is different from the car's Voltmeter, check the Instrument Cluster Printed Circuit for cracks or flaws. Repair/replace the Voltmeter if all wires and Printed Circuit are OK (see Section 8C).

M: TACHOMETER TEST

Measure: VOLTAGE
At: INSTRUMENT CLUSTER PRINTED CIRCUIT CONNECTOR C1 (Disconnected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis Of Incorrect Results
1 (WHT) & Ground	Greater than 10 volts	See 1

- If above voltage is correct, replace the Tachometer.

1. Check WHT (121) wire and Tachometer Filter to Ignition Coil (see schematic). If wire is OK, see Section 6D for further diagnosis.

N: SPEEDOMETER TEST

1. Disconnect connector C207. Connect the J-33431 tester to the harness half of the connector, terminal C (LT GRN) and to ground, using the J-33431-873 harness connector or equivalent. With the tester set to ON, 54 mph, 60 Hz and the Ignition Switch in RUN, the speedometer should read 54 mph + 2 mph.

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- If the Speedometer reads correctly, refer to Vehicle Speed Sensor, Section 8A-33 for further diagnosis.
- If the Speedometer reads incorrectly, check LT GRN (537) wire and the Instrument Cluster Printed Circuit for opens. Replace the Speedometer Assembly if the wire and Printed Circuit are good (see Section 8C).

O: UPSHIFT INDICATOR WIRE TEST

Disconnect ECM connector C207. Put the Ignition Switch in RUN and measure the voltage at terminal H (see section 8A-21 or 22).

- If battery voltage is present, see section 6E for ECM diagnosis.
- If battery voltage is not present, check the TAN/BLK (422) wire for an open or short to Ground.

CIRCUIT OPERATION

The operation of an indicator is explained in the operation of the circuit it is a part of. See the circuit referred to for a complete description of that indicator and the other components that work with it. Only the gages and indicators that do not appear in other schematics are described in this section.

Tachometer

The Tachometer displays engine speed in rpm. Voltage pulses are taken from the Ignition System and sent to the Tachometer. Solid State circuits process these pulses into a signal that drives the pointer of the meter. The Tachometer responds to the frequency of the voltage pulses. These pulses increase with engine speed.

Fuel Gage

The pointer of the Fuel Gage is moved by the magnetic field 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 this coil. One path continues to ground through the F coil. Another goes to ground through the variable resistor of the Fuel Gage Sender Unit.

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

With two coils operating the pointer, the Fuel Gage is not affected by changes in the voltage of the system.

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 90 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 to indicate high or low coolant temperature.

Voltmeter

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

Coolant Temperature Gage

The Coolant 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 Coolant Temperature Sender. This has 54 ohms resistance at 260 °F, 130 °C (hot coolant) and its resistance becomes greater at lower temperatures. It is approximately 1284 ohms at 100 °F (40 °C). This causes the current through the sender and one coil to vary as the coolant temperature charges and this moves the pointer.

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Speedometer and Odometers

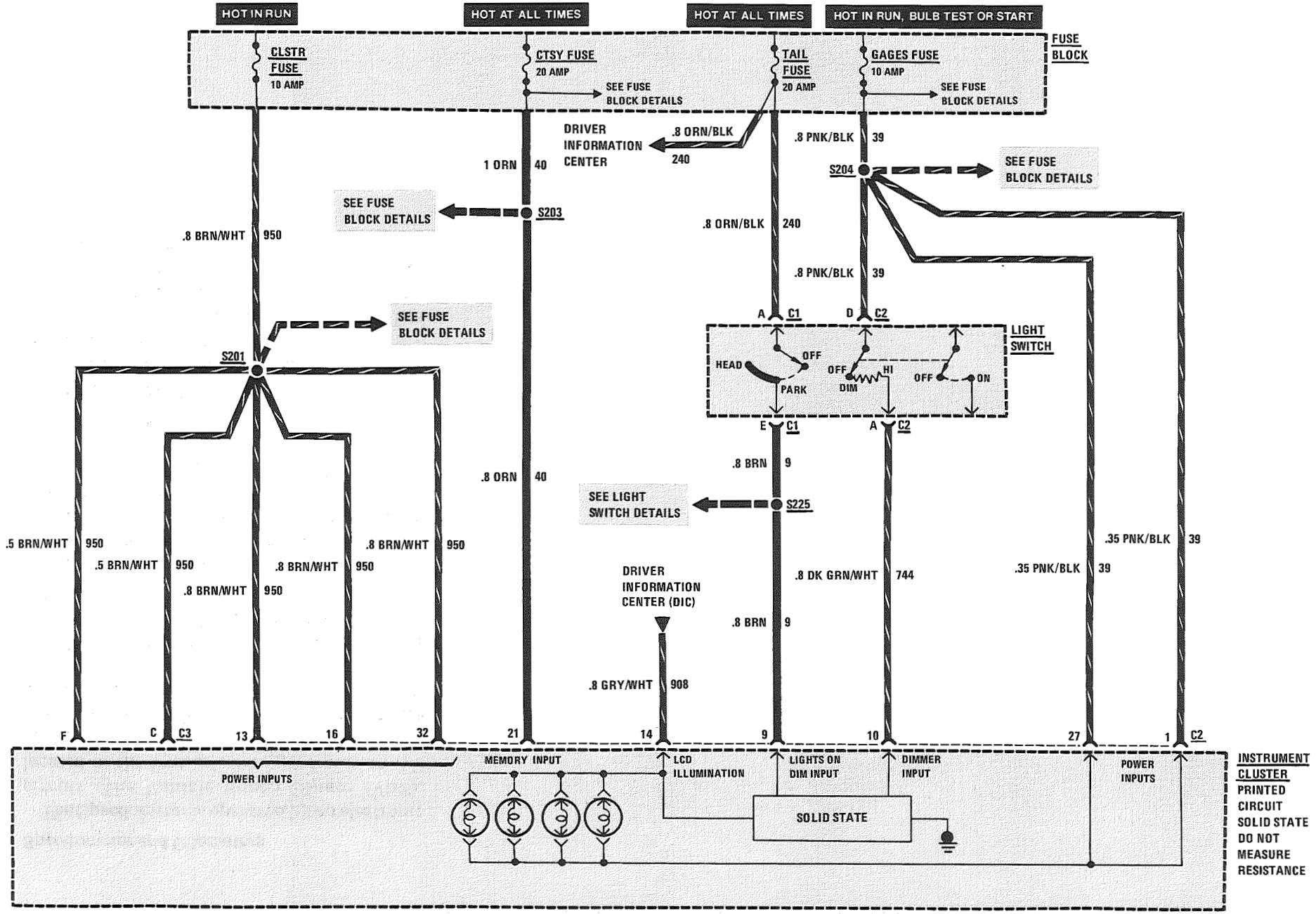
The Speedometer is operated by an electronic circuit. The Vehicle Speed Sensor (VSS), located in the transmission, generates an AC voltage whose frequency is proportional to the speed of the vehicle. This goes to the Vehicle Speed Sensor Buffer and then to the Speedometer circuit board in the Instrument Cluster. The Solid State circuit drives the pointer of the Speedometer. There is no speedometer cable in the vehicle.

The same speed signal from the Vehicle Speed Buffer is processed by the Speedometer circuit board to drive the Odometers. They are operated by a motor that responds to pulses from the Speedometer circuit.

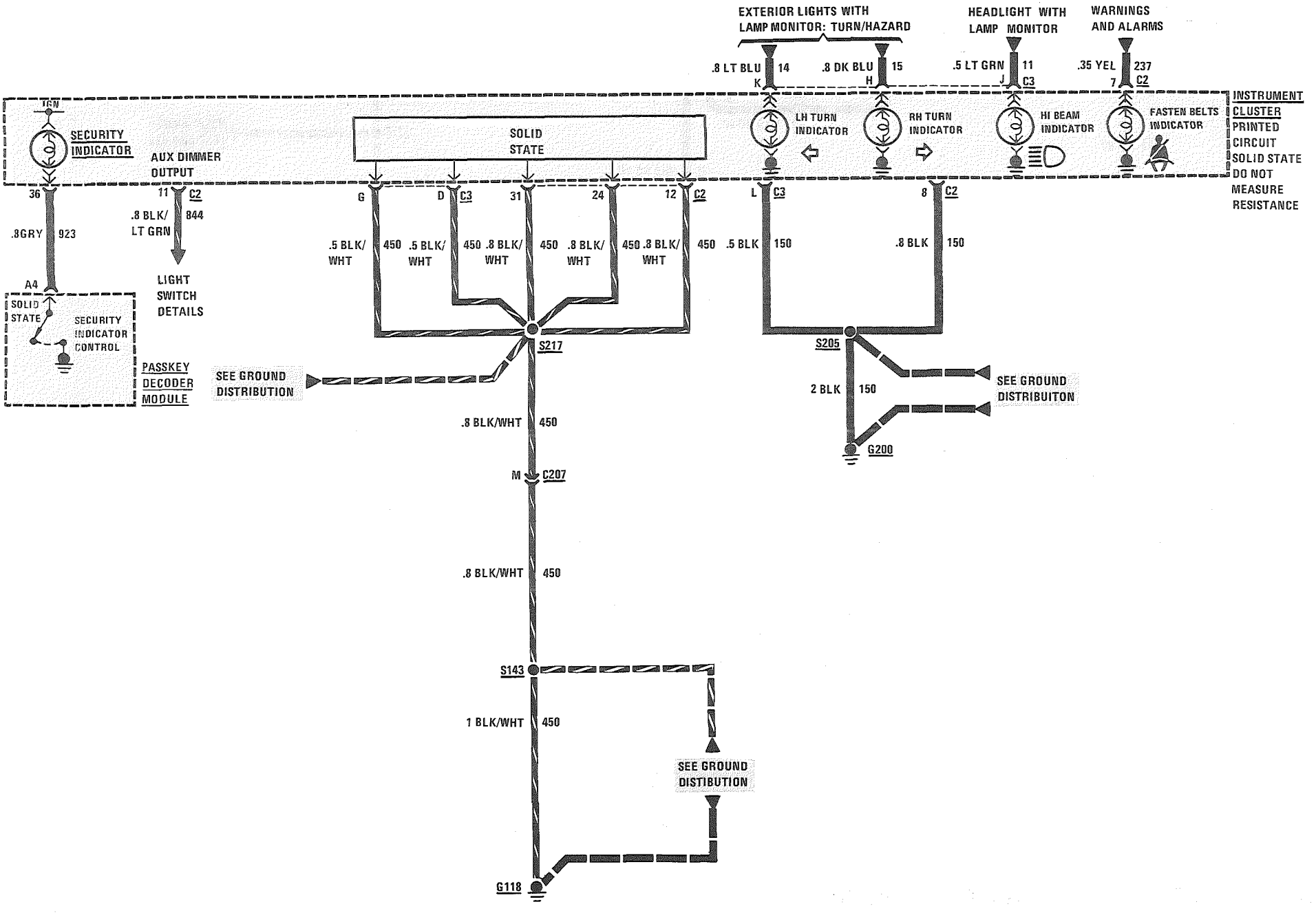
Upshift Indicator

With Manual Transmission, the indicator lights when the car 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 to compute an efficient shift point.

INSTRUMENT PANEL: DIGITAL CLUSTER

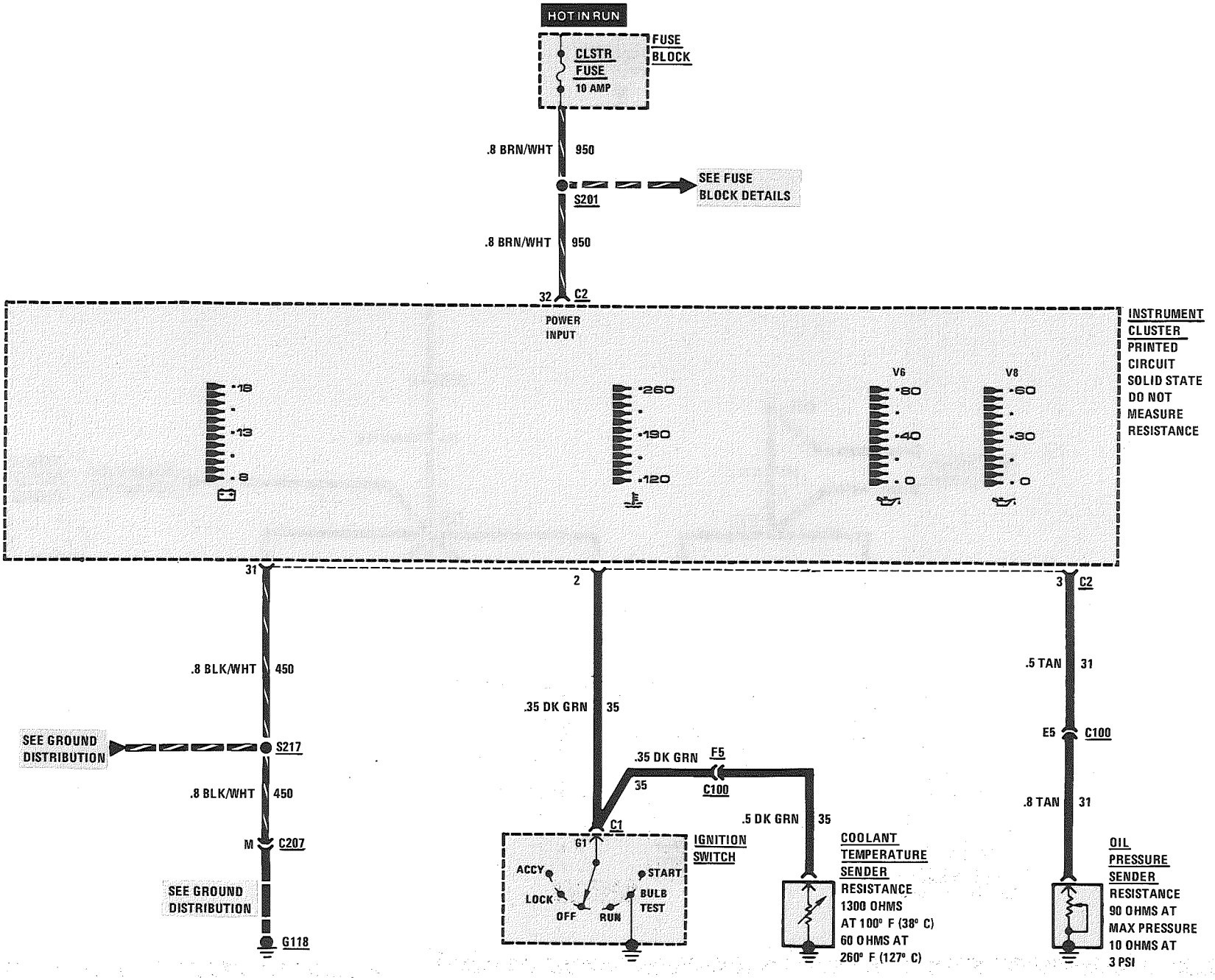


INSTRUMENT PANEL: DIGITAL CLUSTER

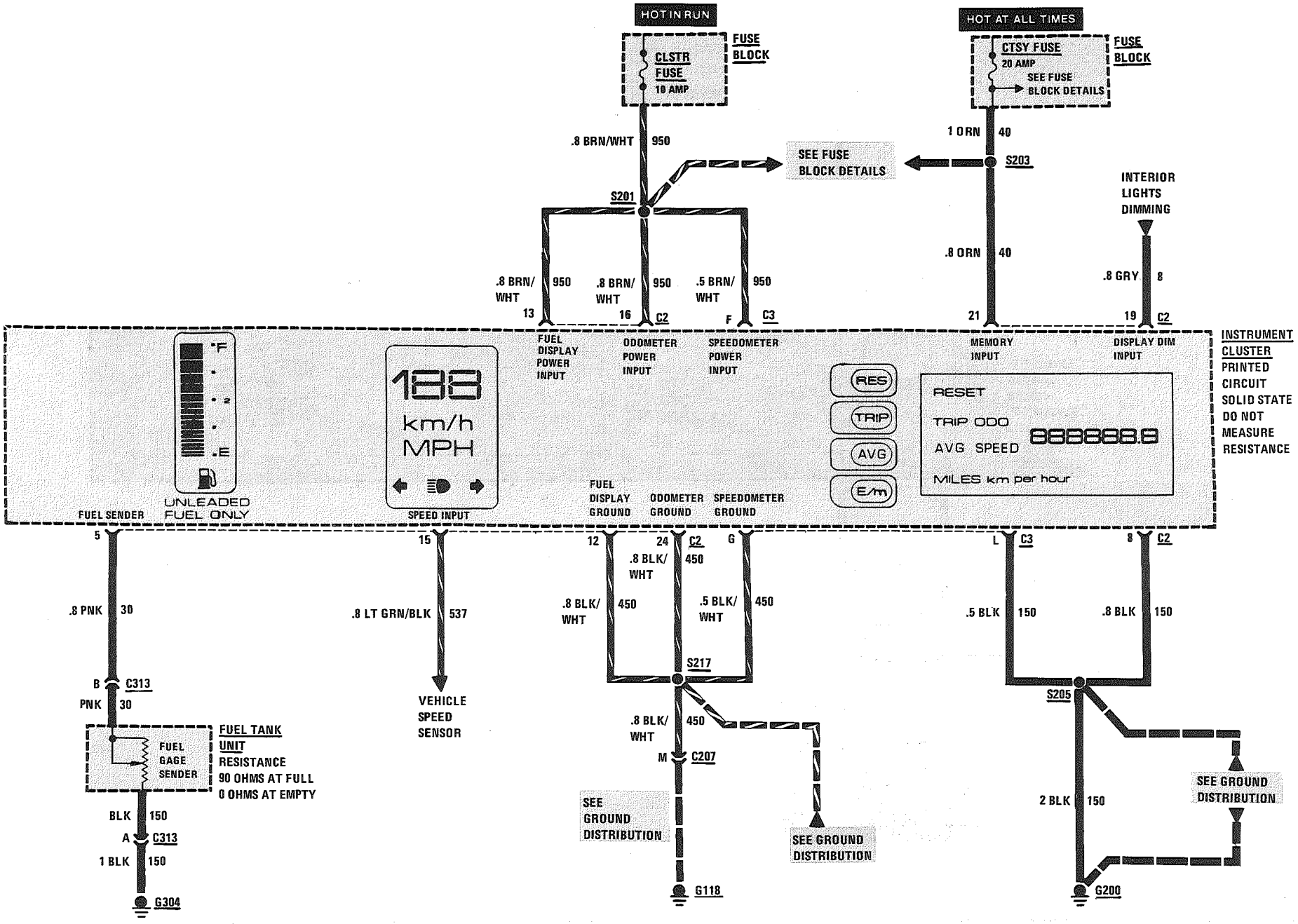


INSTRUMENT PANEL: DIGITAL CLUSTER

GAGES

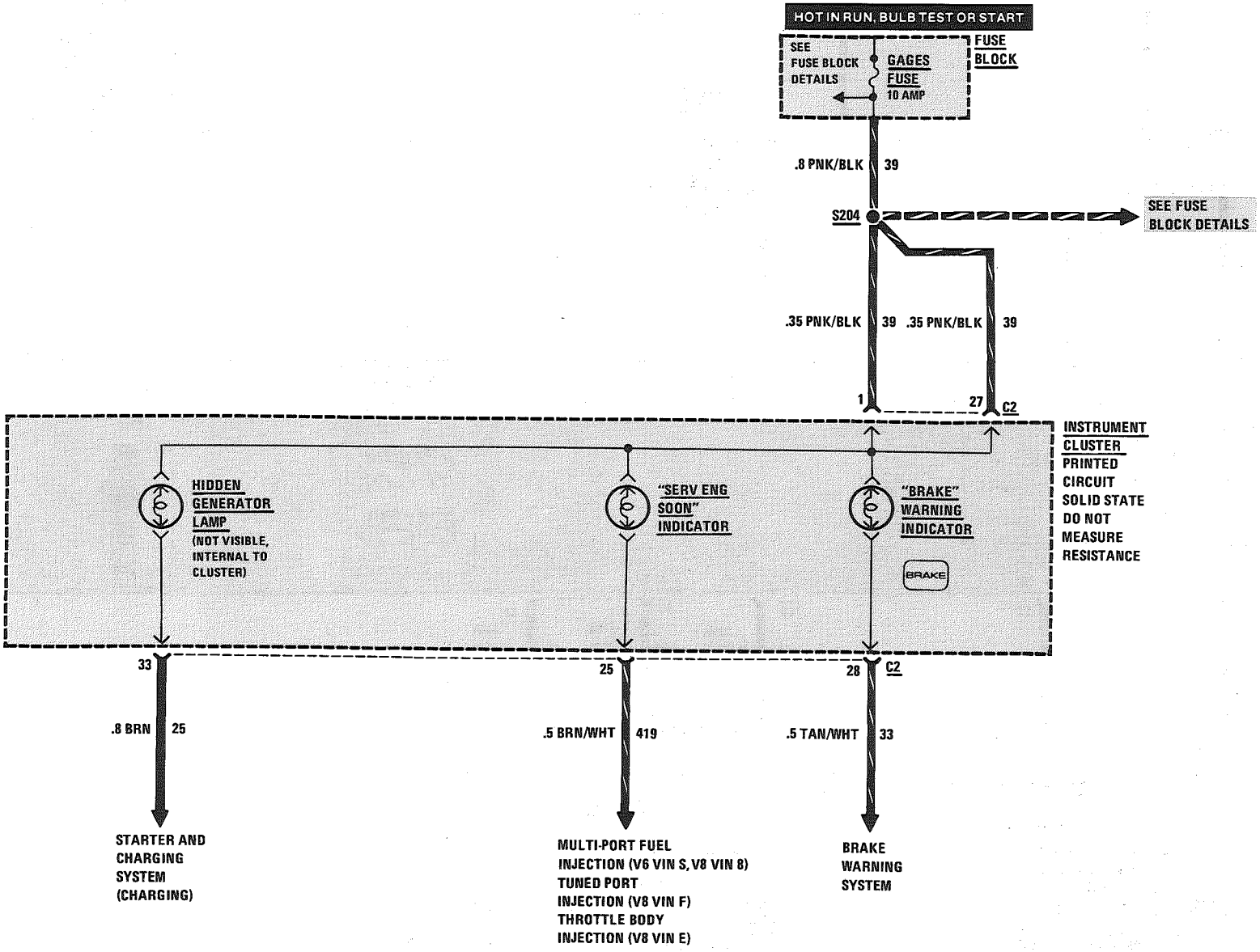


INSTRUMENT PANEL: DIGITAL CLUSTER



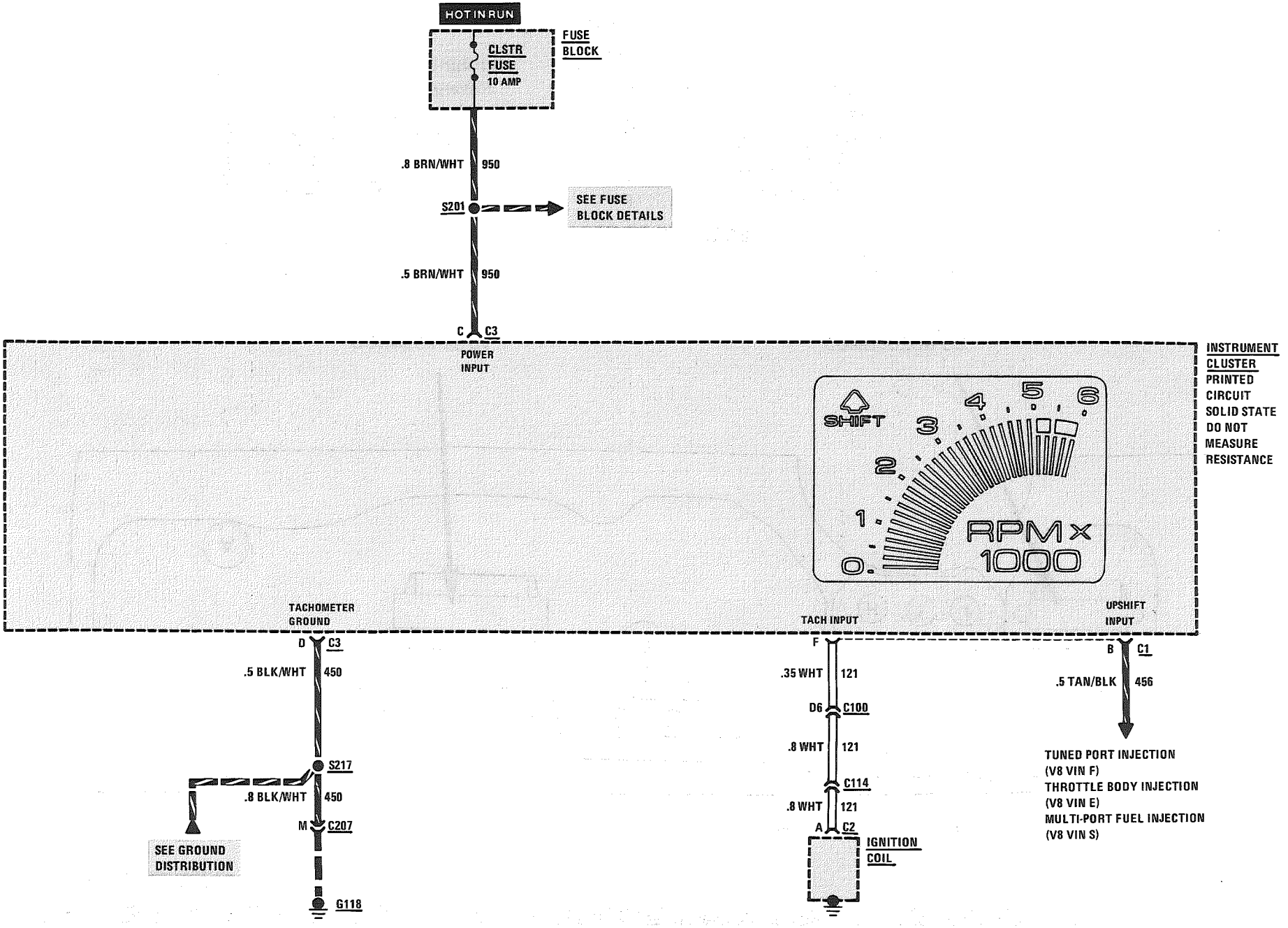
INSTRUMENT PANEL: DIGITAL CLUSTER

INDICATORS



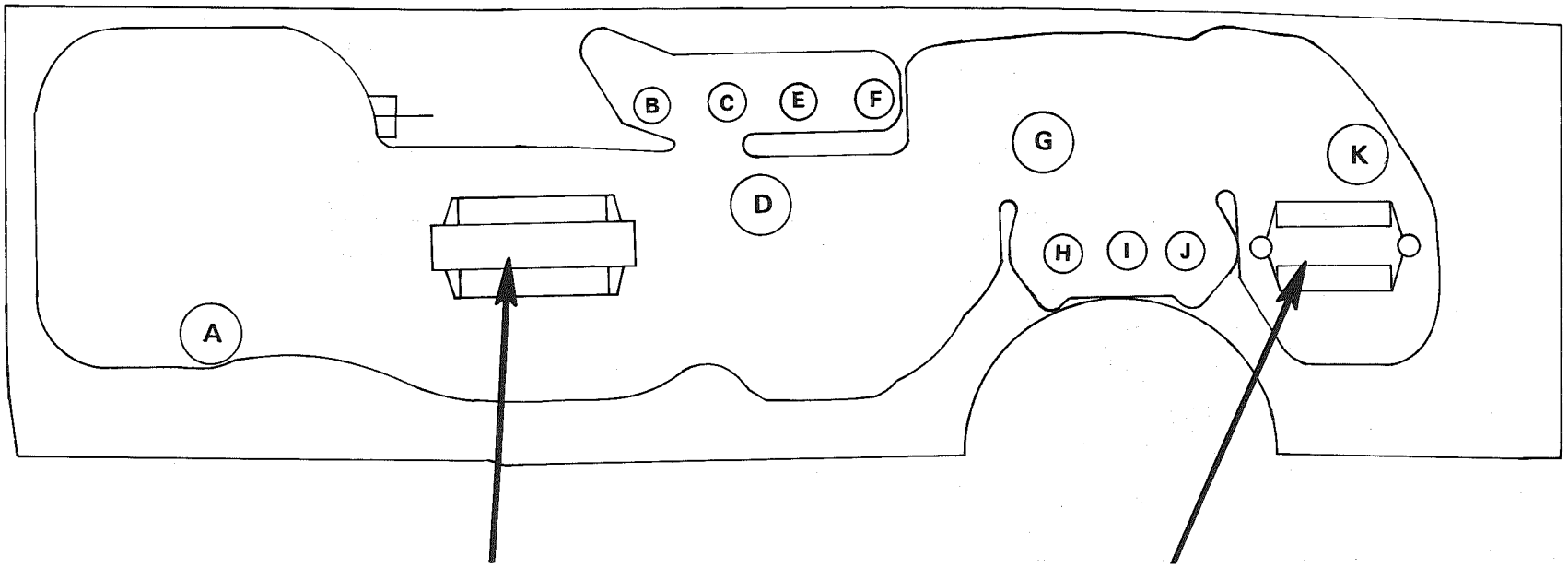
INSTRUMENT PANEL: DIGITAL CLUSTER

TACHOMETER



INSTRUMENT PANEL: DIGITAL CLUSTER

CLUSTER REAR VIEW



BULB LOCATIONS

A LCD Illumination
B Not Used
C FASTEN BELTS Indicator
D LCD Illumination
E BRAKE Warning Indicator
F SERV ENG SOON Indicator
G LCD Illumination
H RH Turn Indicator
I Hi Beam Indicator
J LH Turn Indicator
K LCD Illumination

TROUBLESHOOTING HINTS

- **For a list of symptoms and their diagnosis, go to System Diagnosis.**
- **For Instrument Cluster removal and replacement procedures see Section 8C of the Service Manual.**
- **Try the following checks before doing the System Check.**

1. Check the CLSTR Fuse.
2. Check the CTSY Fuse.
3. Check the TAIL Fuse.
4. Check the GAGES Fuse.
5. If more than one indicator is out, check the battery voltage inputs.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation. Refer to the diagnosis given if other results occur.**
- **Tests follow in System Diagnosis.**

COMPONENT LOCATION

		Page-Figure
Coolant Temperature Sender (VIN E)	Lower LH side of engine	201- 3-A
Coolant Temperature Sender (VIN F) (VIN 8)	Lower LH side of engine	201- 8-A
Fuel Tank Unit	Top center of fuel tank	201- 9-C
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Ignition Coil (VIN E)	Top center rear of engine	201- 4-A
Ignition Coil (VIN F)(VIN 8)	RH rear side of engine	201- 7-B
Ignition Switch	Behind I/P, on top side of steering column	201- 9-A
Oil Pressure Sender (VIN E)	Top rear of engine, near distributor	201- 3-C
Oil Pressure Sender (VIN F) (VIN 8)	Top rear of engine, near distributor	201- 7-C
Oil Pressure Sender (VIN S)	Lower LH side of engine	201- 0-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C114 (1 cavity) (VIN E)	Taped to engine harness, above rear of engine	
C114 (1 cavity) (VIN F) (VIN 8)	Taped to engine harness, above rear of engine	201- 7-B
C207 (15 cavities)	Behind RH side of I/P, near ECM	201-13-A
C313 (3 cavities)	Below center of back seat	201- 9-C
G118 (VIN F) (VIN 8)	Rear of RH cylinder head	201- 5-A
G200	Behind I/P, left of steering column	201-10-A
G304	Under rear seat, on support bracket	
S143 (VIN F) (VIN 8)	Engine harness, RH front of dash	201- 6-A
S201	I/P harness, behind instrument cluster	201-10-A
S203	I/P harness, behind instrument cluster	201-10-A
S204	I/P harness, behind instrument cluster	201-10-A
S205	I/P harness, behind instrument cluster	201-10-A
S217	I/P harness, behind center of I/P	201-10-A
S225	I/P harness, behind instrument cluster	201-10-A

(Continued on next page)

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT	FOR DIAGNOSIS
Turn the Ignition Switch to RUN	All displays light up at full intensity for 2 seconds including Speedometer, Tachometer, Fuel, Oil Pressure, Coolant Temperature, and Battery voltage	Do Tests A and B Check all Ignition Power Inputs and grounds
	Bar graphs (Tachometer, Fuel) run up to the maximum and back again and then display their present readings All other displays use a segment pointer that runs from bottom to top and back again and then displays their present readings Segments of the bar graphs that are not fully illuminated, are lit up faintly and are visible	Replace the Instrument Cluster (See Section 8C)
Press the E/M button on the Digital Instrument Cluster Observe and press it again	Readouts change between English and Metric units This affects the Speedometer and Odometer displays	Replace the Instrument Cluster (See Section 8C)
Press the TRIP button on the Digital Instrument Cluster	The Trip Odometer is displayed	Replace the Instrument Cluster (See Section 8C)
Press the RES button	The Trip Odometer resets to zero	Replace the Instrument Cluster (See Section 8C)
Press the AVG button	The average speed (since last reset) is displayed	Replace the Instrument Cluster (See Section 8C)
Turn the Headlights to Hi Beam	Blue Hi Beam Indicator comes on	Do Test A Check Terminal J (C3)
Turn the Park Lights on and rotate the Dimmer Control	Panel and Switch illumination is varied Digital Cluster brightness is varied	Do Test B Check Terminals 9 and 10
Operate the Turn Lights, first for a right turn and then for a left turn	Green Turn Indicator arrow flashes on and off with the turn signals	Do Test A Check Terminals H and K (C3)
Operate the Hazard Switch	Both Turn Indicators flash simultaneously	Do Test A Check Terminals H and K (C3)
Start the engine	The Tachometer displays the correct engine RPM The Speedometer indicates the correct vehicle speed The Fuel, Oil pressure, Coolant Temperature and Volt displays indicate the correct values	See Symptom Table

SYSTEM DIAGNOSIS

- **Do the tests listed for your symptom in the Symptom Table below, or when directed by the System Check.**
- **Tests follow the Symptom Table.**

SYMPTOM TABLE

SYMPTOM		FOR DIAGNOSIS
ENTIRE CLUSTER	• Is Not Illuminated	Do Test B, Check Terminals 1, 27, and All Grounds
	• LCD Displays Do Not Operate	Do Test B, Check Terminals 13, 16, 32, and All Grounds Do Test A, Check C3 Terminals C, F, and All Grounds
	• Has Missing Display Segments	Replace Cluster (See Section 8C)
	• Does Not Dim When Park Lights Go On	Do Test B, Check Terminals 9 and 10
	• Does Not Dim When I/P Light Dimmer Is Adjusted	Do Test B, Check Terminal 10
	• Does Not Change Between English And Metric Or The Audio Alarm Does Not Work	Replace Cluster (See Section 8C)
SPEEDOMETER/ ODOMETERS TACHOMETER	• Odometer Flashes 9999.9	Replace Memory Chip In Cluster (See Section 8C)
	• Tachometer Does Not Operate	Do Test C
	• Speedometer Does Not Operate, Odometers OK	Replace Cluster (See Section 8C)
	• Odometers Do Not Operate, Speedometer OK	Replace Cluster (See Section 8C)
	• Speedometer And Both Odometers Do Not Operate	See Vehicle Speed Sensor (8A-33)
	• Speedometer And Odometer Are Inaccurate	Do Test M
	• Trip Odometer Does Not Reset To Zero	Replace Cluster (See Section 8C)
COOLANT TEMPERATURE DISPLAY	• Always Reads Hot	Do Test D
	• Is Not Accurate	Do Test F
	• Always Reads Cold	Do Test E
VOLTAGE DISPLAY	• Does Not Operate	Replace Cluster (See Section 8C)
FUEL DISPLAY	• Always Reads Empty	Do Test G
	• Always Reads Full	Do Test H
	• Reading Is Not Accurate	Do Test I
OIL PRESSURE DISPLAY	• Always Reads Maximum Pressure	Do Test K
	• Always Reads Zero Pressure	Do Test J
	• Is Not Accurate	Do Test L

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SYMPTOM TABLE

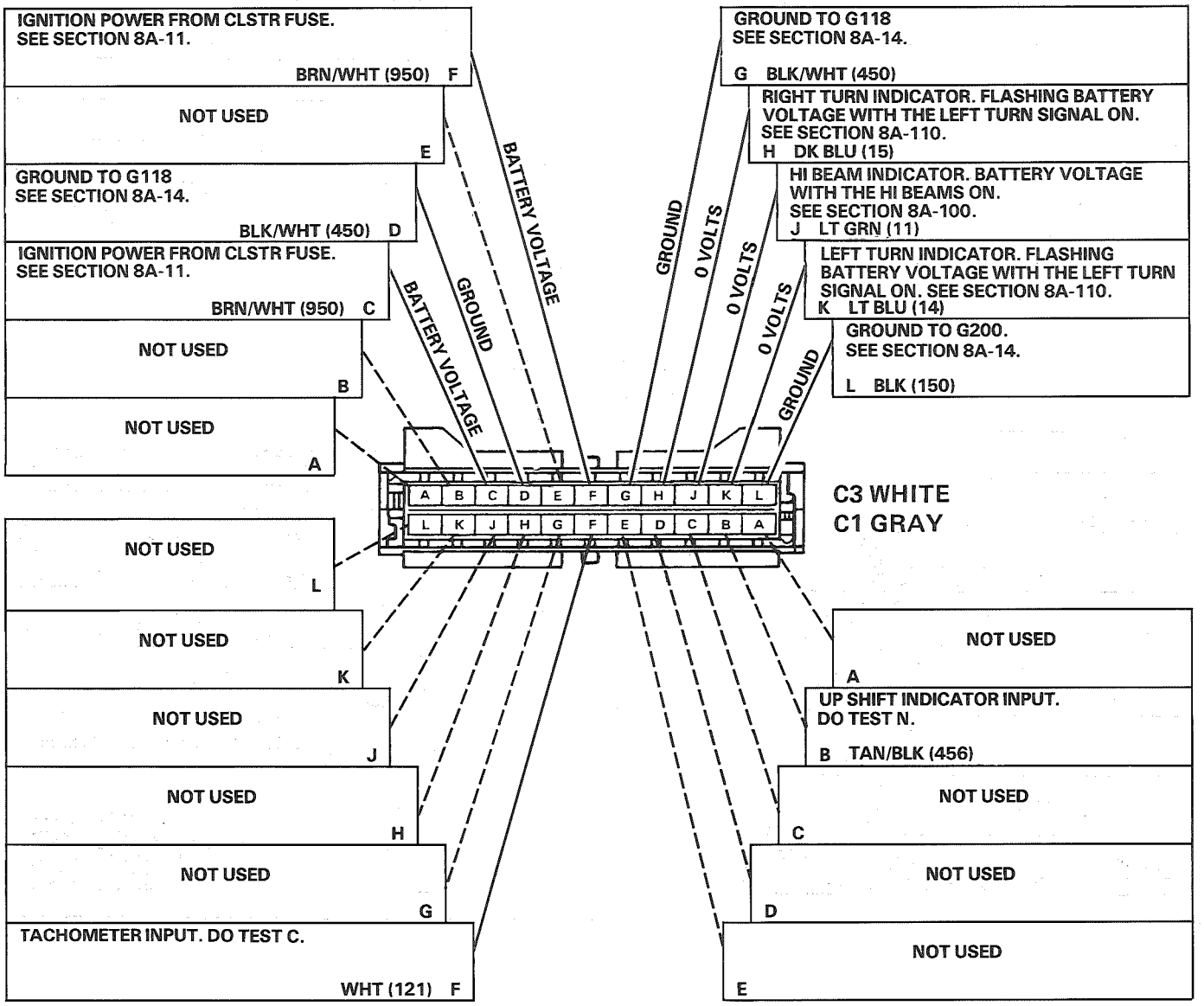
SYMPTOM		FOR DIAGNOSIS
INDICATORS	• Up Shift Indicator Does Not Operate	Do Test N
	• Turn Signal Arrow Indicators Do Not Operate	Do Test A, Check C3 Terminals H and K
	• Hi Beam Indicator Does Not Operate	Do Test A, Check C3 Terminal J
	• Fasten Belts Indicator Does Not Operate	Do Test B, Check Terminal 7
	• SERV ENG SOON Indicator Does Not Work Properly	See Section 6E
	• Brake Warning Indicator Does Not Work Properly	See Brake Warning System (8A-41)

INSTRUMENT PANEL: DIGITAL CLUSTER

(Continued from previous page)

A: CONNECTOR C1/C3 PINOUT TEST

- IGNITION SWITCH IN RUN EXCEPT FOR RESISTANCE MEASUREMENTS
- MAKE ALL RESISTANCE MEASUREMENTS WITH THE NEGATIVE BATTERY CABLE DISCONNECTED
- MEASURE TO GROUND UNLESS ANOTHER TERMINAL IS GIVEN
- CLUSTER CONNECTOR C1/C3 AS SEEN FROM THE DRIVER'S SEAT WITH THE INSTRUMENT CLUSTER REMOVED
- IF THE CORRECT VOLTAGE OR RESISTANCE IS FOUND AT THE TERMINALS, AND THE CLUSTER FUNCTION THAT USES THOSE TERMINALS DOES NOT OPERATE, CHECK WIRES AND BULBS. IF OK, REPLACE THE INSTRUMENT CLUSTER (SEE SECTION 8C)
- IF THE CORRECT VOLTAGE OR RESISTANCE IS NOT FOUND AT A TERMINAL, DO THE TEST GIVEN OR GO TO THE PAGE REFERRED



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INSTRUMENT PANEL: DIGITAL CLUSTER

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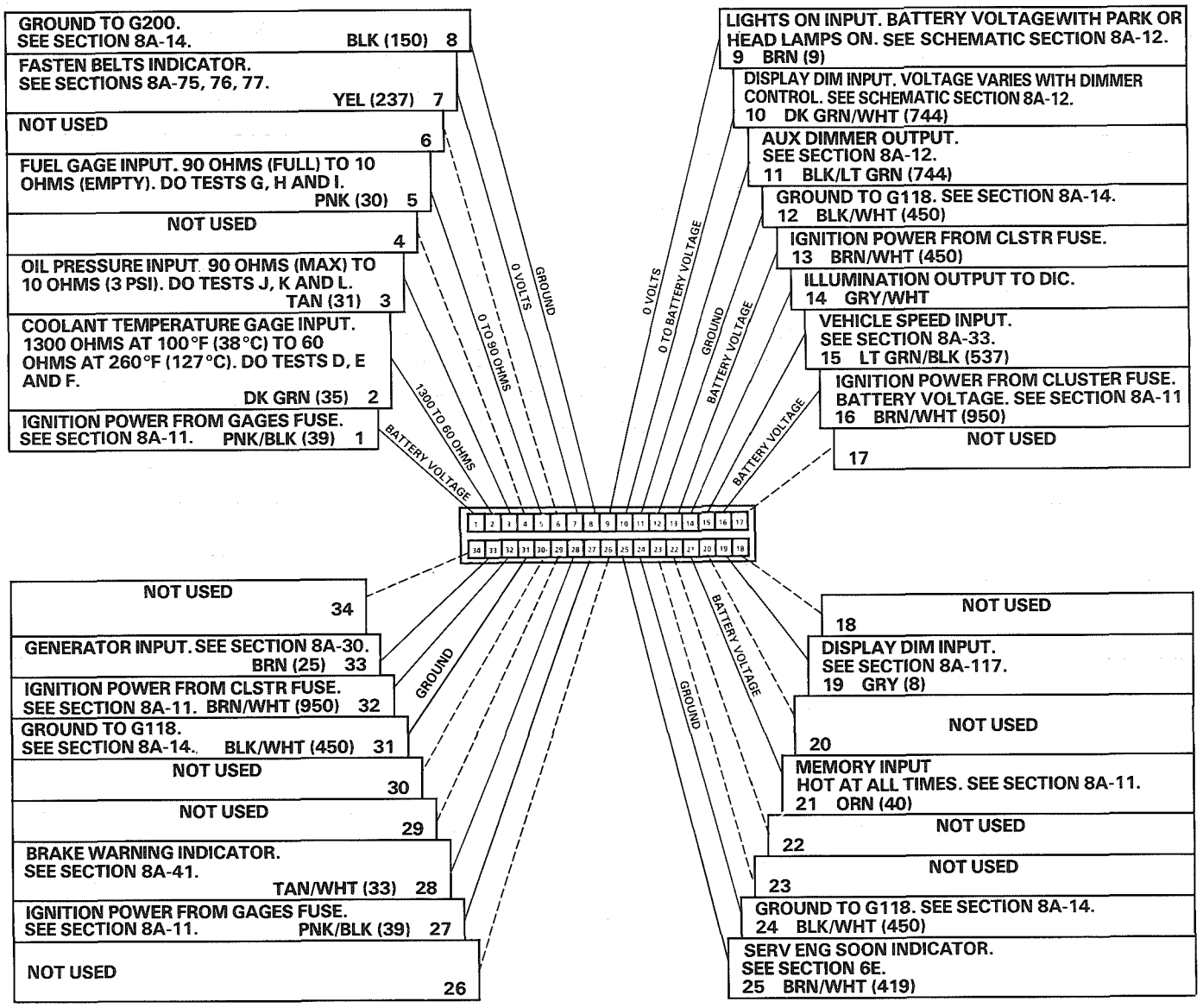
B: CONNECTOR C2 PINOUT TEST

- IGNITION SWITCH IN RUN EXCEPT FOR RESISTANCE MEASUREMENTS
- MAKE ALL RESISTANCE MEASUREMENTS WITH THE NEGATIVE BATTERY CABLE DISCONNECTED
- MEASURE TO GROUND UNLESS ANOTHER TERMINAL IS GIVEN
- CLUSTER CONNECTOR C2 AS SEEN FROM THE DRIVER'S SEAT WITH THE INSTRUMENT CLUSTER REMOVED
- IF THE CORRECT VOLTAGE OR RESISTANCE IS FOUND AT THE TERMINALS, AND THE CLUSTER FUNCTION THAT USES THOSE TERMINALS DOES NOT OPERATE, CHECK WIRES AND BULBS. IF OK, REPLACE THE INSTRUMENT CLUSTER (SEE SECTION 8C)
- IF THE CORRECT VOLTAGE OR RESISTANCE IS NOT FOUND AT A TERMINAL, DO THE TEST GIVEN OR GO TO THE PAGE REFERRED



C: TACHOMETER DOES NOT OPERATE

Disconnect the Ignition coil connector and connect the mating cable from tester J-33431 to the connector. Plug in the tester and set the switches to ON and 54 mph. Switch the Ignition to RUN and observe the Tachometer.

- If the Tachometer reads 900 rpm (V8), or 1350 rpm (V6), check the EST Distributor or Ignition Coil for an open.
- If the Tachometer does not read correctly, check the WHT (121) wire for an open. If OK, replace the Instrument Cluster (See Section 8C).

D: TEMPERATURE DISPLAY ALWAYS SHOWS HOT

Disconnect the Coolant Temperature Sender. Turn the Ignition Switch to RUN and observe the Temperature Gage.

- If the Display now reads cold, replace the Coolant Temperature Sender.
- If the display still reads hot, check the DK GRN/WHT (35) wire for a short to ground (see schematic). If OK, replace the Instrument Cluster (See Section 8C).

E: TEMPERATURE DISPLAY ALWAYS SHOWS COLD

Connect: FUSED JUMPER
At: COOLANT TEMPERATURE SENDER CONNECTOR (Disconnected)
Conditions:
- **Ignition Switch: RUN**

Jumper Between	Correct Result	For Diagnosis
DK GRN (35) & Ground	TEMP Display now reads hot	See 1

- If the test gave the correct result, replace the Coolant Temperature Sender.

1. Check the DK GRN (35) wire for an open (see schematic). If OK, replace the Instrument Cluster (see Section 8C).

F: TEMPERATURE DISPLAY IS NOT ACCURATE

Remove the connector from the Coolant Temperature Sender. Connect one red clip lead of tester J-33431 to the DK GRN (35) wire (see schematic) and the other red clip lead to ground. Adjust the resistance dials of the tester to 1254 ohms, 97 ohms and then to 54 ohms. The Temperature display should show low temperature, approximately 100 °F (40 °C), 220 °F (100 °C), 260 °F (130 °C).

- If the display reads correctly, install a new Coolant Temperature Sender.
- If the display is not correct, check the DK GRN (35) wire between the sender and the Instrument Cluster for high resistance. If this wire is OK, replace the Instrument Cluster (See Section 8C).

G: FUEL GAGE INDICATES EMPTY WHEN THERE IS FUEL IN THE TANK

Disconnect the Fuel Tank Unit connector (C313). Turn the Ignition Switch to RUN.

- If the Fuel Gage now indicates full, replace the Fuel Gage Sender.
- If the Fuel Gage still indicates empty, check/repair the PNK (30) wire for a short to ground (see schematic). If the wire is OK, replace the Instrument Cluster (see Section 8C).

H: FUEL GAGE ALWAYS INDICATES FULL

Connect: FUSED JUMPER
At: FUEL TANK UNIT CONNECTOR (C313, Socket Half) (Disconnected)
Conditions:
- **Ignition Switch: RUN**

Jumper Between	Correct Indication	For Diagnosis
B (PNK) & Ground	Fuel Gage Reads Empty	See 1
B (PNK) & A (BLK)	Fuel Gage Reads Empty	See 2

- If the Fuel Gage indicates correctly both times, replace the Fuel Gage Sender.

1. Check the PNK (30) wire for an open (see schematic). If OK, replace the Instrument Cluster (see Section 8C).
2. Check/repair BLK (150) wire to ground G304 for an open (see schematic).

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I: FUEL GAGE IS INACCURATE

Disconnect the fuel tank unit connector C313 and connect the two red clip leads of tester J-33431 to terminals A (BLK) and B (PNK) of the harness half of that connector C313. Set the resistance dials of the tester to 0 ohms, 44 ohms and then to 90 ohms. The Fuel display should read "E", 1½ and Full. Cycle the Ignition after each resistance change.

- If the display responds correctly, install a new Fuel Gage Sender.
- If the display does not respond correctly, check the PNK (30) wire between the fuel tank and the Instrument Cluster for high resistance. If this wire is OK, replace the Instrument Cluster (see Section 8C).

J: OIL PRESSURE DISPLAY READS ZERO

Check the oil pressure with a manual gage. If the pressure is correct, continue with the electrical diagnosis.

Remove the connector from the Oil Pressure Sender.

- If the display now shows high pressure, the wiring is good. Install a new Oil Pressure Sender.
- If the display remains low, check for a short in the TAN (31) wire between the sender and the Instrument Cluster. If that wire is not shorted to ground, replace the Instrument Cluster (see Section 8C).

K: OIL PRESSURE DISPLAY READS MAXIMUM PRESSURE

Disconnect the connector from the Oil Pressure Sender and jumper the TAN (31) wire to ground. Put the Ignition Switch in RUN.

- If the display now reads low, the wiring is good. Install a new Oil Pressure Sender.
- If the display remains high, check for an open in the TAN (31) wire back to the Instrument Cluster. If that wire is good, replace the Instrument Cluster (see Section 8C).

L: OIL PRESSURE DISPLAY IS INACCURATE

Disconnect the connector from the Oil Pressure Sender and connect one red clip lead from tester J-33431 to the TAN (31) wire terminal. Connect the other red clip lead to ground. Set the resistance dials of the testor to 0 ohms, 43 ohms and then to 90 ohms. The display should read 0 PSI (0 kPa), 40 PSI (280 kPa) and 80 PSI (660 kPa) with the V6 or 0 PSI (0 kPa) 130 PSI (210 kPa) and 60 PSI (420 kPa) with the V8.

- If the display is correct, install a new Oil Pressure Sender.
- If the display is not correct, check the TAN (31) wire for high resistance (no more than 1 ohm). If is is good, replace the Instrument Cluster (see Section 8C).

M: SPEEDOMETER TEST

(J33431-873 connector available)

1. Disconnect connector C207. Connect the J-33431 tester to the harness half of the connector, terminal C (LT GRN and ground using the J33431-873 harness connector or equivalent). With the tester set to ON, 54 mph, 60 Hz and the Ignition Switch in RUN, the Speedometer should read 54 mph ± 2 mph.
   - If the Speedometer reads correctly, refer to Vehicle Speed Sensor, Section 8A-33 for further diagnosis.
   - If the Speedometer reads incorrectly, check DK GRN (389) wire and the Instrument Cluster Printed Circuit for opens. Replace the Instrument Cluster if the wire and Printed Circuit are good (see Section 8C).

N: UPSHIFT INDICATOR WIRE TEST

Disconnect ECM connector C207. Put the Ignition Switch in RUN and measure the voltage at terminal H (see Section 8A-21, 22).

- If battery voltage is present, see Section 6E for ECM diagnosis.
- If battery voltage is not present, check the TAN/BLK (456) wire for an open or short to ground.

CIRCUIT OPERATION

The Instrument Cluster uses a microprocessor to develop data for fuel supply, coolant temperature, oil pressure, voltage, engine rpm, and vehicle speed. The Digital Cluster also contains an Odometer, Warning Indicators, and an Audible Alarm. The Audible Alarm signals low oil pressure, high temperature, low or high voltage, and low fuel.

With the Ignition Switch in RUN, voltage is applied through the GAGES Fuse to the Battery Power inputs of the Instrument Cluster. With the Light Switch in PARK or HEAD, voltage is applied at all times to the Lights On Dim Input. The car's speed is displayed in mph or kmh by selecting either English or Metric with the English/Metric selector switch.

Gages and Audible Alarm

With the Ignition Switch in RUN, voltage is applied through the GAGES Fuse to the Battery Power Input terminal. With the Light Switch in PARK or HEAD, voltage is applied at all times to the Lights On Dim Input.

Fuel Display

The Fuel Display Sender provides a signal to the cluster that is related to fuel level. With a full tank the resistance is 90 ohms, and with an empty tank the resistance is less than 1 ohm. The microprocessor converts this signal and activates a 12 segment bar graph which displays the fuel level. When the bar graph fuel gage display changes from two segments to one, the Audible Alarm beeps briefly.

Oil Pressure Display

The Oil Pressure Sender, with a resistance of 0 to 90 ohms, sends a signal to the cluster that is related to oil pressure. At zero pressure (0 PSI), resistance is 0 ohms, and at maximum pressure (80 PSI), resistance is approximately 90 ohms. The microprocessor converts the signal and activates a 12 segment bar graph which displays the oil pressure. When the bar graph changes from two segments to one segment (approximately 4 PSI), the Audible Alarm beeps briefly.

Temperature Display

The Coolant Temperature Sender sends a signal to the Instrument Cluster that is related to coolant temperature. Coolant Temperature Sender resistance drops from 1,365 ohms at 100°F (38°C), to 55 ohms at 260°F (127°C). The temperature display is a bar graph display with 12 segments. When the bar graph changes to all segments activated (hot coolant temperature), the Audible Alarm beeps.

Volts Display

The microprocessor in the gages module receives a signal from the Battery Power Input terminal. This signal activates the 12 segment bar graph volts display. The volts gage ranges from 8 volts (1 segment lit) to 18 volts (all segments lit). Under idling and normal driving conditions, 7 or 8 segments are lit. When the volts gage displays less than 4 segments or more than 12 segments, the Audible Alarm beeps.

Tachometer

The Tachometer displays engine speed in rpm. Voltage pulses are taken from the Ignition System and sent to the Tachometer. Solid state circuits process these pulses into a signal that controls the Tachometer display. The Tachometer responds to the frequency of the voltage pulses, the number of pulses in a second. This increases with engine speed. The Tachometer Filter in the circuit rounds off the pulses and removes voltage spikes.

Speedometer

The digital Speedometer is operated by an electronic circuit. The Vehicle Speed Sensor, located in the Transmission, generates an AC voltage whose frequency is proportional to the speed of the vehicle. This goes to the Vehicle Speed Sensor Buffer and then to the Speedometer circuit board in the Instrument Cluster. The solid state circuit processes this signal into a control signal for the Speedometer display.

Odometer

The digital Odometer display is operated by an electronic circuit. The Vehicle Speed Sensor, located in the Transmission, generates an AC voltage whose frequency is proportional to miles (kilometers) traveled. This goes to the Buffer and then to the Odometer circuit board in the Instrument Cluster. The solid state circuit processes this signal into a control signal for the Odometer display. Distance Data is stored in NV RAM Chip.

Indicators

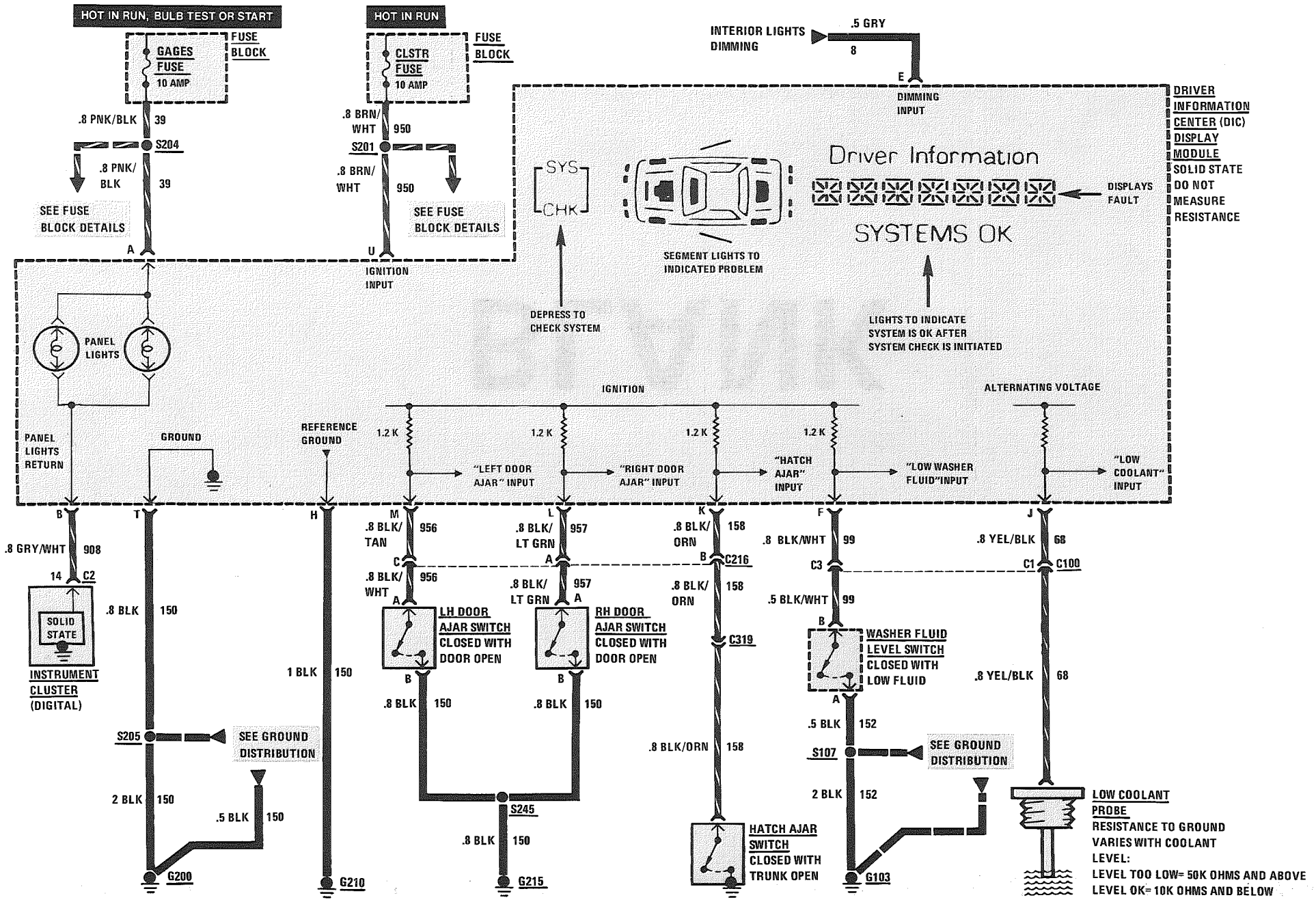
See the circuit referred to for the complete operation of an indicator and the other components that work with it.

Upshift Indicator

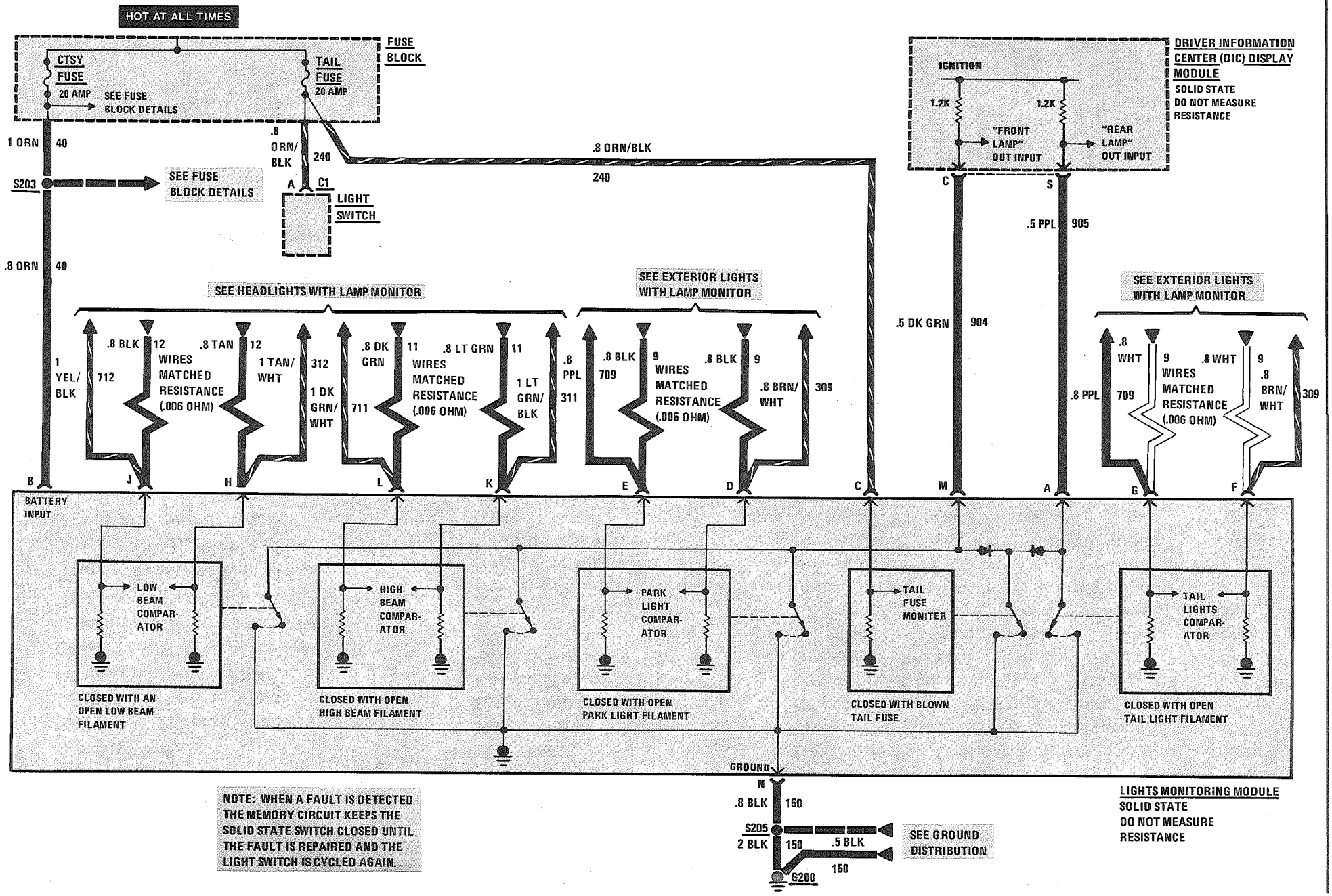
With Manual Transmission, the indicator lights when the car should be shifted to the next higher gear for better fuel economy. Battery voltage is applied to one side of the bulb. The other side of the bulb is switched to ground by the ECM which uses engine data to compute an efficient shift point.

BLANK

DRIVER INFORMATION CENTER (DIC)



DRIVER INFORMATION CENTER (DIC)



NOTE: WHEN A FAULT IS DETECTED THE MEMORY CIRCUIT KEEPS THE SOLID STATE SWITCH CLOSED UNTIL THE FAULT IS REPAIRED AND THE LIGHT SWITCH IS CYCLED AGAIN.

DRIVER INFORMATION CENTER (DIC)

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check GAGES Fuse by observing that the Instrument Panel Lights come on with the Headlight Switch in Park.
2. Check CLSTR Fuse by observing that the Instrument Cluster operates normally.
3. Check CTSY Fuse by observing that the Courtesy Lights operate normally.
4. Check the TAIL Fuse by observing that the Tail Lights operate normally.
5. Check that grounds G200 and G210 are clean and tight.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation. Refer to the diagnosis given if other results occur.**
- **Tests follow in System Diagnosis.**

COMPONENT LOCATION

		Page-Figure
Door Ajar Switch	On each center lock pillar	
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Hatch Ajar Switch	Center of end panel, in cargo compartment	
Lights Monitoring Module	Behind I/P, at base of steering column	
Low Coolant Probe (Except VIN S)	On RH rear of radiator	201- 2-B
Low Coolant Probe (VIN S)	On LH side of radiator	201- 2-C
Washer Fluid Level Switch	LH side of engine compartment	201-16-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C216 (3 cavities)	Behind LH side of I/P, left of steering column	
C319 (1 cavity)	Behind I/P, at LH shroud	
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A
G200	Behind I/P, left of steering column	201-10-A
G210	Behind center of I/P, on support bracket	201-10-A
G215	Behind LH side of I/P, left of steering column	
S107	Front lights harness, behind LH headlights	201-16-A
S201	I/P harness, behind instrument cluster	201-10-A
S203	I/P harness, behind instrument cluster	201-10-A
S204	I/P harness, behind instrument cluster	201-10-A
S205	I/P harness, behind instrument cluster	201-10-A
S245	Ajar harness, behind LH side of I/P	

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DRIVER INFORMATION CENTER (DIC)

SYSTEM CHECK TABLE

ACTION	NORMAL OPERATION
Turn the Igntion Switch to RUN	Driver Information Center (DIC) Display comes on Parts of the vehicle symbols (LCD) light up in sequence The following messages are scrolled, or spelled out as they move across the Display: RIGHT DOOR AJAR FRONT LAMP LEFT DOOR AJAR REAR LAMP LOW COOLANT LOW WASHER FLUID HATCH AJAR PONTIAC SYSTEMS OK Audible Warning will sound twice when the PONTIAC SYSTEMS OK displays at the end of the routine
Press the SYS CHK button on the DIC display	The start-up routine is repeated as described when the Ignition Switch is turned to RUN in Step 1
With all the doors closed, open the LH door	LH door of vehicle symbol lights LEFT DOOR AJAR is displayed
Leave the LH door open, and open the RH door	LH and RH doors of vehicle symbol are lit RIGHT DOOR AJAR is displayed
Leave both doors open, and open the trunk	LH and RH doors and trunk of vehicle symbol are lit TRUNK AJAR is displayed for 2 seconds RIGHT DOOR AJAR is then displayed

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

SYSTEM DIAGNOSIS

- **Do the tests listed for your symptom in the Symptom Table below or when directed by the System Check.**
- **Tests follow the Symptom Table.**

SYMPTOM TABLE

SYMPTOM	FOR DIAGNOSIS
None of the DIC Indicator segments light or messages are displayed	Do Test A
Low Washer Fluid Indicator segment lights and message is displayed when the reservoir is not low	Do Test C
Low Washer Fluid Indicator segment does not light and message is not displayed with the washer fluid reservoir low	Do Test B
Low Coolant Indicator segment does not light and message is not displayed when the coolant is low	Do Test D
Low Coolant Indicator segment lights and message is displayed when the coolant is not low	Do Test E

(SYMPTOM TABLE continued on next page)

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SYMPTOM TABLE

Hatch Ajar Indicator segment lights and message is displayed when the trunk is closed	Do Test F
Hatch Ajar Indicator segment does not light and message is not displayed with the trunk open	Do Test G
Headlamp Outage Indicator segment lights and message is displayed when all lamps are OK	Check the DK GRN (904) wire for a short to ground (see schematic) If OK, replace the Lights Monitor Module
Taillamp Outage Indicator segment lights and message is displayed when all lamps are OK	Check the PPL (905) wire for a short to ground (see schematic) If OK, replace the Lights Monitor Module
Headlamp Outage Indicator Segment does not light and message is not displayed when a lamp is out	Check the DK GRN (904) wire and printed circuit for an open If OK, replace the Lights Monitor Module

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Taillamp Outage Indicator segment does not light and message is not displayed when a lamp is out	Check the PPL (905) wire and printed circuit for an open If OK, replace the Lights Monitor Module
One of the Door Ajar segments lights and message is displayed when that door is closed	Do Test H
One of the Door Ajar segments does not light and message is not displayed with that door open	Do Test I

A: POWER INPUT TEST

Measure: VOLTAGE
At: DIC CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis of Incorrect Results
A (PNK/BLK) & Ground	Battery	See 1
U (BRN/WHT) & Ground	Battery	See 2
A (PNK/BLK) & T (BLK)	Battery	See 3
A (PNK/BLK) & H (BLK)	Battery	See 4

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A (PNK/BLK) & B (GRY/WHT)	Battery	See 5

- If all results are correct, replace the DIC.

1. Check the PNK/BLK (39) wire for an open (see schematic).
2. Check the BRN/WHT (950) wire for an open (see schematic).
3. Check the BLK (150) wire for an open (see schematic). Check ground G200.
4. Check the BLK (150) wire. Check ground G210.
5. Check the GRY/WHT (908) wire for an open (see schematic).

B: WASHER FLUID LEVEL OPEN SWITCH TEST

Connect: JUMPER
At: WASHER FLUID LEVEL SWITCH CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Jumper Between	Correct Result	For Diagnosis of Incorrect Result
B (BLK/WHT) & Ground	Windshield Indicator/Low Washer Fluid lights after 11 seconds	See 1
B (BLK/WHT) & A (BLK)	Windshield Indicator/Low Washer Fluid lights after 11 seconds	See 2

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- If both tests are good, replace the Washer Fluid Level Switch.

1. Check the BLK/WHT (99) wire for an open (see schematic).
2. Check the BLK (152) wire for an open (see schematic).

C: WASHER FLUID LEVEL SHORTED SWITCH TEST

Disconnect the Washer Fluid Level Switch Connector terminal A. Switch the Ignition to RUN and observe the Low Washer Fluid Indicator segment on windshield of the vehicle symbol on the DIC.

- If the Low Washer Fluid segment is now off, and Low Washer Fluid is not displayed, replace the Washer Fluid Level Switch.
- If the Low Washer Fluid segment lights, and LOW WASHER FLUID is displayed, check the BLK/WHT (99) wire for a short to ground.

D: LOW COOLANT PROBE CONNECTOR TEST

If the Low Coolant message does not come on and the indicator segment on the vehicle symbol does not light with the coolant low, remove the connector to the Low Coolant Probe. With the Ignition in RUN the indicator should operate after approximately 11 seconds.

- If it does, install a new Low Coolant Probe.
- If it does not, check YEL/BLK wire to the DIC Display for a short to ground. Install a new DIC display if the wire is good.

E: LOW COOLANT PROBE RESISTANCE TEST

If the LOW COOLANT message comes on and the indicator segment on the vehicle symbol lights with the engine coolant full, check the resistance of the Low Coolant Probe and its wire. Remove the connector from the probe and measure the resistance to ground of the probe.

- If the resistance is higher than 30,000 ohms, install a new Low Coolant Probe.
- If the probe and its wiring are good, and the display does not indicate properly, install a new DIC.

F: HATCH AJAR SHORTED SWITCH TEST

Disconnect the Hatch Ajar Switch Connector. Switch the Ignition to RUN and observe the Hatch Ajar Indicator segment on the trunk of the vehicle symbol on the DIC.

- If the Hatch Ajar segment is now off and HATCH AJAR is not displayed, replace the Hatch Ajar Switch.
- If the Hatch Ajar segment is still on, and HATCH AJAR is displayed, check the BLK/ORN (158) wire for a short to ground (see schematic).

G: HATCH AJAR OPEN SWITCH TEST

Connect: JUMPER
At: HATCH AJAR SWITCH CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Jumper Between	Correct Result	For Diagnosis of Incorrect Results
BLK/ORN (158) & Ground	Trunk Indicator/ HATCH AJAR Displayed	See 1

- If the test is correct, replace the Hatch Ajar Switch.

1. Check the BLK/ORN (158) wires for an open (see schematic).

H: DOOR AJAR SHORTED SWITCH TEST

Disconnect the suspect Door Ajar Switch terminal A Connector. Switch the Ignition to RUN and observe the Door Ajar Indicator segment of the vehicle symbol on the DIC.

- If the Door Ajar segment is now off and the suspect DOOR AJAR message is not displayed, replace the Door Ajar Switch.
- If the Door Ajar segment lights and the suspect DOOR AJAR message is displayed, check the wire at terminal A for a short to ground (see schematic).

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I: DOOR AJAR OPEN SWITCH TEST

Connect: JUMPER
At: SUSPECT DOOR AJAR SWITCH CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Jumper Between	Correct Result	For Diagnosis of Incorrect Results
A & Ground (see schematic)	Door Indicator/ DOOR AJAR Displayed	See 1
A & B (see schematic)	Door Indicator/ DOOR AJAR Displayed	See 2

- If both results are good, replace the Door Ajar Switch.

1. Check the wire at terminal A for an open (see schematic).
2. Check the wire at terminal B for an open (see schematic).

CIRCUIT OPERATION

The Driver Information Center (DIC) displays warnings about saftey conditions in the vehicle. The location of the condition is indicated in a car symbol, where segments of the symbol are lit. Seven displays that form letters light up to spell out the condition, such as LOW COOLANT. The car symbol and the letters are made by Liquid Crystal Displays (LCD) that are turned on by a solid state microprocessor.

Door and trunk switches that are closed with the door open (like interior light switches) are connected to the DIC Display. These ground the DIC inputs if the door or trunk is not closed tightly, and then the display illuminates the warning. The Washer Fluid Level Switch works in the same way. It closes when the windshield washer fluid is low.

The Low Coolant Probe 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 DIC Display to light the LOW COOLANT warning. With more of the probe covered by coolant, its resistance decreases. When the fluid level is good, the resistance will be less than 10,000 ohms. With the probe resistance between 10,000 and 50,000 ohms, the probe is partly covered and the fluid is not low enough to cause the warning to be displayed.

Burned out light bulbs in the vehicle are detected by the Lights Monitor. The power feed from a switch to a bulb circuit contains resistance wire. This is connected between the switch and the Lights Monitor Module. If the bulb is on properly, the current through the resistance wire causes a small voltage drop, less than one volt. When a bulb burns out, there is no current through it and the voltage drop at the module is missing. The Lights Monitor Module detects this battery voltage at one of its inputs (instead of slightly lower voltage) and closes a solid state switch in the Module to cause the warning to appear in the DIC Display.

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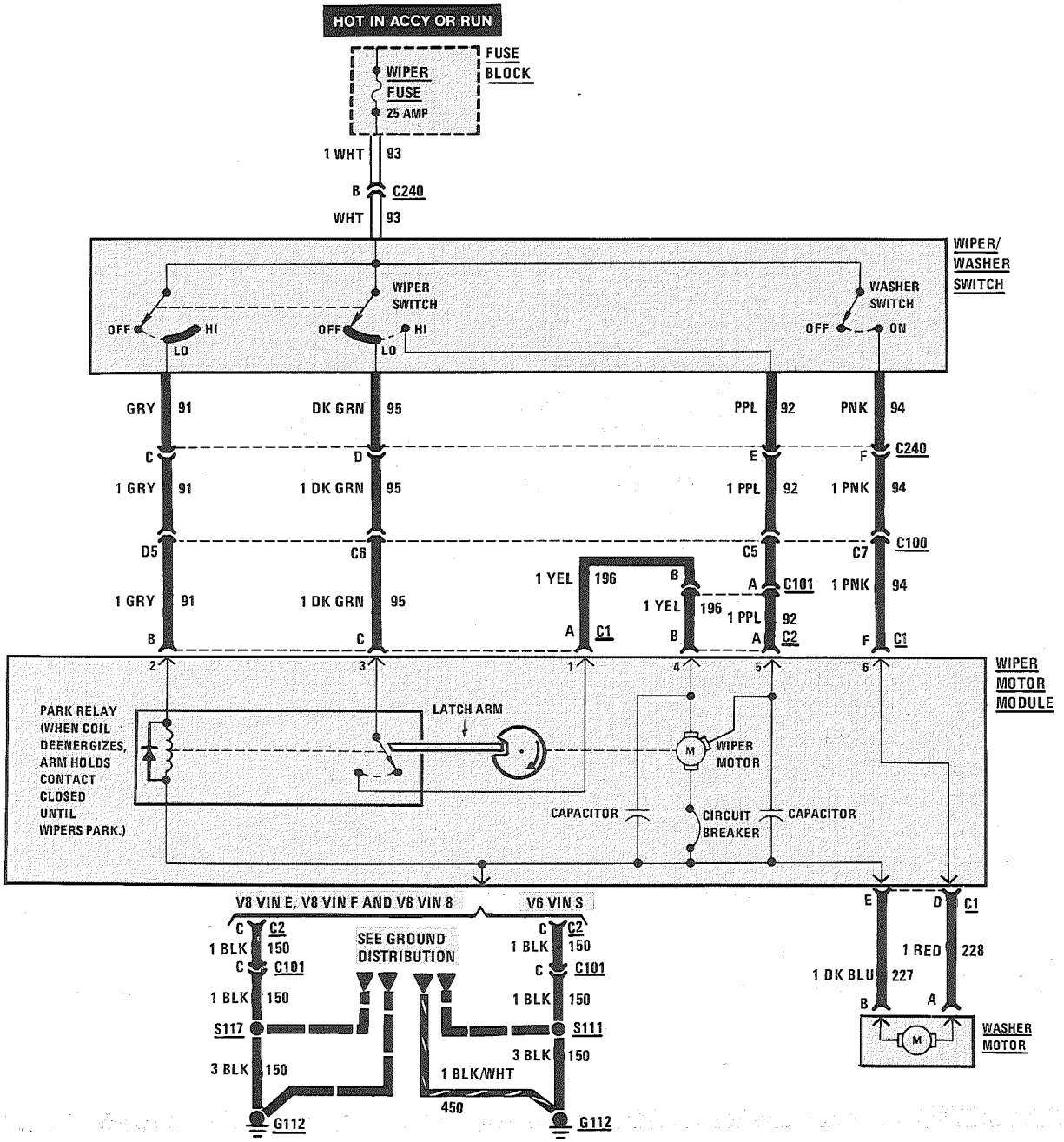
HOT IN ACCY OR RUN
FUSE BLOCK
WIPER FUSE 25 AMP
1 WHT 93
B C240
WHT 93
WIPER/ WASHER SWITCH
WIPER SWITCH
WASHER SWITCH
OFF HI LO
OFF HI LO
OFF ON
GRY 91
DK GRN 95
PPL 92
PNK 94
C
D
E
F C240
1 GRY 91
1 DK GRN 95
1 PPL 92
1 PNK 94
D5
C6
C5
C7 C100
1 YEL 196
B
A C101
1 PNK 94
1 GRY 91
1 DK GRN 95
1 YEL 196
1 PPL 92
B
C
A C1
B
A C2
F C1
2
3
1
4
5
6
WIPER MOTOR MODULE
PARK RELAY (WHEN COIL DEENERGIZES, ARM HOLDS CONTACT CLOSED UNTIL WIPERS PARK.)
LATCH ARM
M
WIPER MOTOR
CAPACITOR
CIRCUIT BREAKER
CAPACITOR
V8 VIN E, V8 VIN F AND V8 VIN 8
V6 VIN S
C C2
1 BLK 150
C C101
1 BLK 150
S117
3 BLK 150
G112
SEE GROUND DISTRIBUTION
C C2
1 BLK 150
C C101
1 BLK 150
S111
3 BLK 150
1 BLK/WHT
450
G112
E D C1
1 RED 228
1 DK BLU 227
B A
M
WASHER MOTOR

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the WIPER Fuse by visual inspection.
2. Check that the three Wiper Motor mounting bolts are clean and tight.
3. Check that the Wiper/Washer Switch connector C240 is correctly mated.
4. If the Washer does not operate, check that:
   — Washer reservoir is filled.
   — Hoses are not pinched or kinked.
   — Hoses are correctly attached.
   — Nozzles are not clogged.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

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

COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Washer Motor	LH side of engine compartment, in washer fluid reservoir	201- 2-A
Wiper Motor Module	LH front of dash	201- 0-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C101 (3 cavities)	LH front of dash	201- 8-E
C240 (7 cavities)	Behind I/P, near base of steering column	201- 9-A
G112 (VIN E)	Rear of LH cylinder head	201- 3-C
G112 (VIN F) (VIN 8)	Rear of LH cylinder head	201- 7-C
G112 (VIN S)	Rear of LH cylinder head	201- 0-C
S111	Engine harness, RH rear of engine compartment	201- 1-A
S117 (VIN E)	Engine harness, RH front of dash	201- 2-A
S117 (VIN F) (VIN 8)	Engine harness, top center rear of engine	201- 7-A

SYSTEM CHECK TABLE

ACTION	NORMAL OPERATION
Hold the Washer Switch ON for one or two seconds	Washer sprays the windshield as long as washer switch is held ON Wipers run at low speed and continue to run in LO after washer cycle is completed
Turn the Wiper Switch to LO	Wipers run continuously at low speed
Turn the Wiper Switch to HI	Wipers run continuously at a faster speed
Turn the Wiper Switch to OFF	Wipers complete sweep at low speed and park

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

SYSTEM DIAGNOSIS

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

(Continued on next page)

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SYMPTOM TABLE

SYMPTOM	DO TEST
Wipers do not operate in any mode	A. Wiper/Washer Switch Battery Voltage Test B. Wiper Motor Module Input Test
Wipers run in low speed only (High speed inoperative)	B. Wiper Motor Module Input Test
Wipers will not shut off	B. Wiper Motor Module Input Test
Wipers run in high speed only (Low speed inoperative)	B. Wiper Motor Module Input Test
Washer will not operate	C. Washer Motor Module Voltage Test
Washer runs continuously	B. Wiper Motor Module Input Test

A: WIPER/WASHER SWITCH BATTERY VOLTAGE TEST

Measure: VOLTAGE
At: WIPER/WASHER SWITCH CONNECTOR C240 (Connected)
Condition:
- **Ignition Switch: ACCY**

Measure Between	Correct Voltage	For Diagnosis
B (WHT) & Ground	Battery	See 1

- If voltage is correct, do Test B.

1. Check Wiper Fuse and WHT (93) wire for an open (see schematic).

B: WIPER MOTOR MODULE INPUT TEST

Measure: VOLTAGE
At: WIPER MOTOR MODULE CONNECTORS C1 & C2 (Connected)
Conditions:
- **Ignition Switch: ACCY**
- **Wiper Switch: OFF or LO**

Measure Between	Correct Voltage	For Diagnosis
C1C (DK GRN) & Ground	Battery	See 1
• Wiper Switch: LO or HI		
C1B (GRY) & Ground	Battery	See 2
• Wiper Switch: HI		

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C2A (PPL) & Ground	Battery	See 3
• Washer Switch: OFF		
C1F (PNK) & Ground	0 Volts	See 4
• Wiper Switch: LO		
C1A (YEL) & Ground	Battery	See 5
C2B (YEL) & Ground	Battery	See 6

- If all the voltages are correct, but the Wiper Motor Module does not operate, remove the Wiper Motor Module for repair (See Section 8E for diagnostic procedures).

1. Check the DK GRN (95) wire for an open. Check that the Wiper/Washer Switch connector C240 is correctly mated. If OK, replace the Wiper/Washer Switch.
2. Check the GRY (91) wire for an open. Check that the Wiper/Washer Switch connector C240 is correctly mated. If OK, replace the Wiper/Washer Switch.
3. Check the PPL (92) wire for an open. Check that the Wiper/Washer Switch connector C240 is correctly mated. If OK, replace the Wiper/Washer Switch.
4. Replace the Wiper/Washer Switch.
5. Remove the Wiper Motor for repair (See Section 8E for diagnostic procedures).
6. Check the YEL (196) wire for an open.

C: WASHER MOTOR MODULE VOLTAGE TEST (TABLE 1)

Measure: VOLTAGE
At: WIPER MOTOR MODULE CONNECTOR C1 (Connected)
Conditions:
- **Ignition Switch: ACCY**
- **Washer Switch: ON**

Measure Between	Correct Voltage	For Diagnosis
F (PNK) & Ground	Battery	See 1

- If voltage is correct, go to Table 2.

1. Check PNK (94) wire for an open. Check that Wiper/Washer Switch connector C240 is correctly mated. If wire and connector are good, replace the Wiper/Washer Switch.

C: WASHER MOTOR MODULE VOLTAGE TEST (TABLE 2)

Measure: VOLTAGE
At: WASHER MOTOR CONNECTOR (Disconnected)
Conditions:
- **Ignition Switch: ACCY**
- **Washer Switch: ON**

Measure Between	Correct Voltage	For Diagnosis
A (RED) & Ground	Battery	See 1
A (RED) & B (DK BLU)	Battery	See 2

- If both voltages are correct, but Washer Motor does not run, replace Washer Motor.

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1. Check RED (228) wire for an open. If wire is good, check for open in internal wiring of Wiper Motor Module. (between terminals F and D).
2. Check DK BLU (227) wire for an open.

CIRCUIT OPERATION

LO SPEED

When the Wiper/Washer Switch is in the LO position, battery voltage is applied to the Park Relay through the GRY wire. This closes the relay contacts and supplies battery voltage to the Wiper Motor through the DK GRN and YEL wires. The wiper blades run continuously. When the Wiper/Washer Switch is turned to the OFF position, the Park Relay is deenergized. However, a mechanical arm riding on a cam attached to the Wiper Motor keeps the relay contacts closed until the wipers park or complete the last sweep. After this last sweep the mechanical arm falls into a detent permitting the relay contacts to open. This stops the Wiper Motor, and the Wiper blades remain in park.

HI SPEED

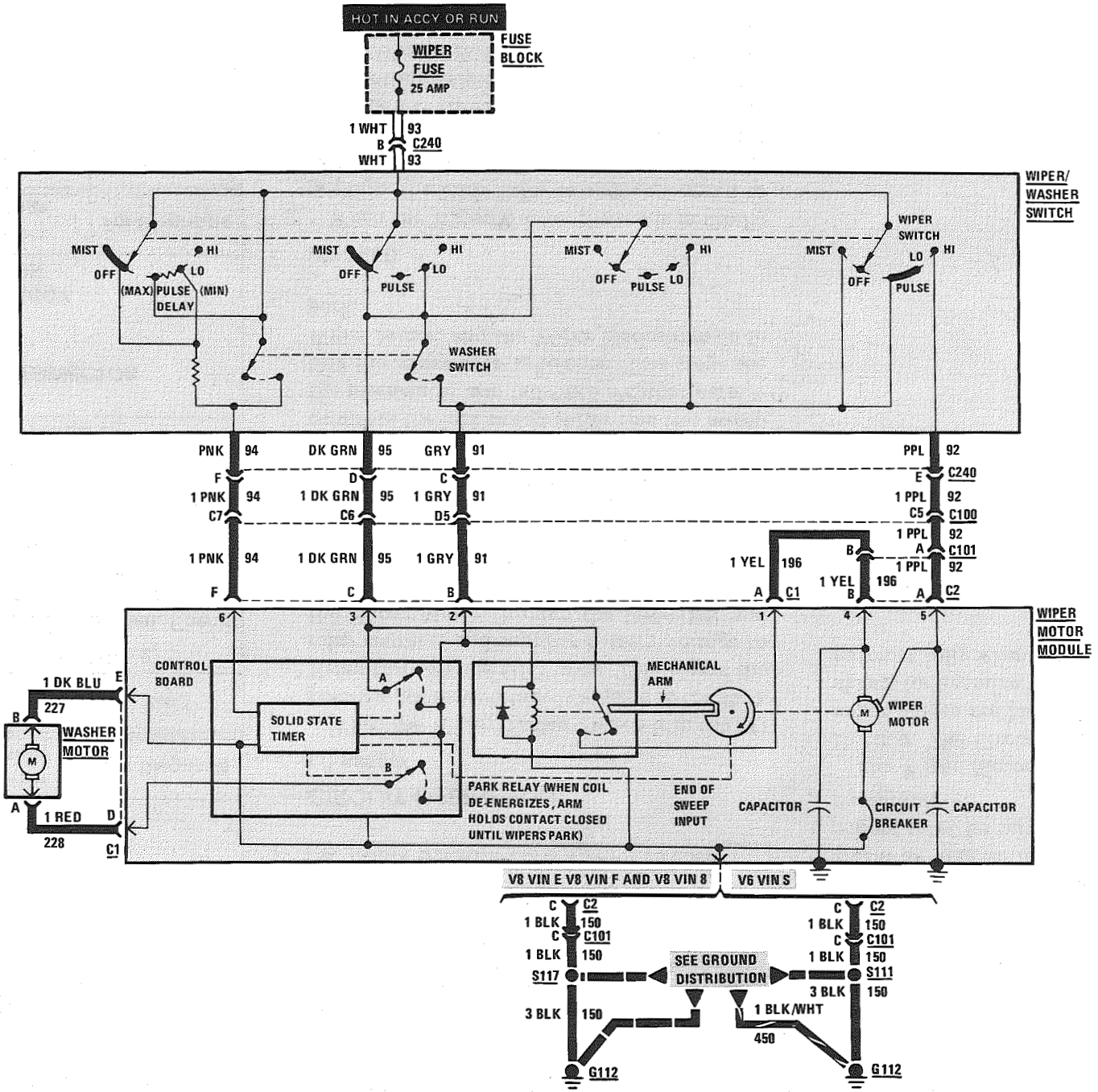
When the Wiper/Washer Switch is in the Hi position, the Park Relay is again energized to relase the latch arm. However, battery voltage is applied to the high speed brushes of the Wiper Motor through the PPL wire. The wipers run continuously at a higher speed. When the Wiper/Washer Switch is turned OFF, the wiper blades will move at low speed for the final sweep and then park.

WASHER OPERATION

When the Washer Switch is pressed ON, battery voltage is applied to the Washer Motor as well as mechanically advancing the Wiper Switch to LO. The Washer sprays the windshield as long as its switch is held ON. The wipers must be turned off manually after the wash cycle.

The Wiper Motor is protected by a Circuit Breaker. The Circuit Breaker will open if the wiper blades are blocked, by ice on the windshield, for example. The Circuit Breaker resets automatically when it cools.

WIPER/WASHER: PULSE, CD4



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

1. Check the Wiper Fuse by visual inspection.
2. Check that the three Wiper Motor mounting bolts are clean and tight.
3. Check that Wiper/Washer Switch connector C240 and Wiper/Washer Motor Module Connectors are mated correctly.
4. If the Washer does not operate, check that:
   - — The Washer reservoir is filled.
   - — The hoses are not pinched or kinked.
   - — The hoses are correctly attached.
   - — The nozzles are not clogged.

- **Go to System Check for a guide to normal operation.**
- **Go to System diagnosis for diagnostic tests.**

SYSTEM CHECK

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

COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Washer Motor	LH side of engine compartment, in washer fluid reservoir	201- 2-A
Wiper Motor Module	LH front of dash	201- 0-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C101 (3 cavities)	LH front of dash	201- 8-E
C240 (7 cavities)	Behind I/P, near base of steering column	201- 9-A
G112 (VIN E)	Rear of LH cylinder head	201- 3-C
G112 (VIN F) (VIN 8)	Rear of LH cylinder head	201- 7-C
G112 (VIN S)	Rear of LH cylinder head	201- 0-C
S111	Engine harness, RH rear of engine compartment	201- 1-A
S117 (VIN E)	Engine harness, RH front of dash	201- 2-A
S117 (VIN F) (VIN 8)	Engine harness, top center rear of engine	201- 7-A

SYSTEM CHECK TABLE

ACTION	NORMAL OPERATION
1. Press Washer Switch ON for less than one second.	Washer sprays windshield for approximately 2½ seconds Wipers run at low speed and continue to run at low speed until the Washer Button is released After button is released, Wipers run for approximately six seconds and then return to park
2. Turn Wiper Switch to PULSE (Delay Mode)	Wipers make one complete stroke, then pause for 0 to 25 seconds before making the next stroke The wait time is adjusted by turning the Wiper Switch through the delay range
3. With the Wiper Switch in PULSE, hold the Washer Switch on for one or two seconds	Washer sprays windshield as long as Washer Button is held ON Pulse function is overridden and the Wipers run at low speed during spray period After the Washer stops, the Wipers continue to run for six seconds Wipers return to Pulse operation

(SYSTEM CHECK TABLE continued on next page)

(SYSTEM CHECK TABLE continued from previous page)

4. With the Wiper Switch in HI, hold Washer Switch for one or two seconds	Same operation as low speed wash except that the Wipers run at high speed
5. Turn Wiper Switch to LO	Wipers run continuously at low speed
6. Turn Wiper Switch to HI	Wipers run continuously at high speed
7. Turn Wiper Switch to OFF	Wipers return to park position at low speed
8. Move Wiper Switch to MIST	Wipers make one complete stroke and then park

SYSTEM DIAGNOSIS

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

SYMPTOM TABLE

SYMPTOM	DO TEST
Wipers do not operate in any mode	A: Wiper/Washer Voltage Test B: Wiper Motor Voltage Test
Wipers run at low speed only	B: Wiper Motor Voltage Test
Wipers run at high speed only	B: Wiper Motor Voltage Test
Wipers will not shut off	B: Wiper Motor Voltage Test
No delay in the Pulse (Delay) Mode	C: Wiper/Washer Pulse Control Resistance Test
Washer will not operate	D: Washer Pump Voltage Test

A: WIPER/WASHER VOLTAGE TEST

Measure: VOLTAGE
At: WIPER/WASHER SWITCH CONNECTOR C240 (Disconnected)
Condition:
- **Ignition Switch: ACCY**

Measure Between	Correct Voltage	For Diagnosis
B (WHT) & Ground	Battery	See 1

- If the voltage is correct, return to Symptom Table.

1. Check Wiper Fuse and WHT (93) wire for an open.

B: WIPER MOTOR VOLTAGE TEST

Measure: VOLTAGE
At: WIPER MOTOR MODULE CONNECTORS (Disconnected)
Conditions:
- **Ignition Switch: ACCY**
- **Wiper Switch: MIST, PULSE, and LO**

Measure Between	Correct Voltage	For Diagnosis
B (GRY) C1 & Ground	Battery	See 1
B (GRY) C1 & C (BLK) C2	Battery	See 4

• Wiper Switch: HI		
A (PPL) C2 & Ground	Battery	See 2
• Wiper Switch: MIST, OFF, and LO		
C (DK GRN) C1 & Ground	Battery	See 3

- If all voltages are correct, but the Wiper/Washer Module does not operate normally, remove the Wiper Motor Module for repair. See Section 8E for diagnostic procedures.

1. Check the GRY (91) wire for an open. Check that connectors C240 and C100 are properly mated. If the wire and connectors are good, replace the Wiper/Washer Switch.
2. Check the PPL (92) wire for an open. Check that connectors C240 and C100 are properly mated. If the wire and connectors are good, replace the Wiper/Washer Switch.
3. Check the DK GRN (95) wire for an open. Check that connectors C240 and C100 are properly mated. If wire and connectors are good, replace the Wiper/Washer Switch.
4. Check the BLK (150) wire for an open.

C: WIPER/WASHER PULSE CONTROL RESISTANCE TEST

Measure: RESISTANCE
At: WIPER MOTOR MODULE CONNECTOR C1 (Disconnected)
Conditions:
- **Ignition Switch: ACCY**
- **Negative Battery Terminal: DISCONNECTED**
- **Wiper Switch: LO**

Measure Between	Correct Resistance	For Diagnosis
B (GRY) & F (PNK)	Approximately 24K ohms	See 1
• Move Wiper Switch through delay range to maximum delay position		
B (GRY) & F (PNK)	Approximately 1.2 Megohms	See 1

- If resistances are correct, but Pulse Mode does not operate, remove the Wiper Motor Module for repair. See Section 8E for diagnostic instructions.

1. Check the GRY (91) and PNK (94) wires for opens. If wires are OK, replace the Wiper/Washer Switch.

D: WASHER PUMP VOLTAGE TEST

Measure: VOLTAGE
At: WIPER MOTOR MODULE CONNECTOR (Disconnected)
Conditions:
- **Ignition Switch: ACCY**
- **Wiper/Washer Switch: OFF**
- **Washer Switch: OFF**

Measure Between	Correct Voltage	For Diagnosis
B (GRY) & Ground	0 Volts	See 1
• Washer Switch: ON		
B (GRY) & Ground	Battery	See 1
• Wiper/Washer Switch: HI • Washer Switch: OFF		
F (PNK) & Ground	0 Volts	See 1
• Washer Switch: ON		
F (PNK) & Ground	Battery	See 1
D (RED) C1 & E (DK BLU) C1	Battery	See 2

- If voltages are correct, but Washer Pump does not run check the RED (228) wire and DK BLU (227) wire for an open. If wires are good, replace the Washer Motor.

1. Check GRY (91) wire or PNK (94) wire for an open. If wire is good, replace Wiper/Washer Switch.
2. Remove Wiper Motor Module for repair. See Section 8E for diagnostic procedures.

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CIRCUIT OPERATION

In addition to the features of a conventional (Non-pulse) wiper system (MIST, LO and HI speed), the pulse-type windshield 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 Timer Relay in the Wiper/Washer Assembly. The duration of the delay interval is determined by the Delay Rheostat in the Wiper/Washer Control Switch.

Pulse Operation

With the Wiper/Washer Switch in Pulse, battery voltage is applied to the Wiper/Washer Motor Module at terminal B through the GRY wire. Voltage is also applied to terminal F through the PNK wire and the pulse delay resistance in the Wiper/Washer Switch. The battery voltage at terminal B energizes the Park Relay which closes its contacts. In response to the voltage at terminal F, the Solid State Timer momentarily closes contact A on the control board which applies the battery voltage at terminal B to the contacts of the Park Relay, starting the Wiper Motor.

A second mechanical arm (end of sweep input) operates contacts on the Control Board which cause the contacts at A to open when the wipers have completed their sweep. Since the Park Relay remains energized, the wipers do not park but remain just above the parked position until the Control Board closes the contacts at A again to start another sweep.

The length of delay time between sweeps is controlled by the variable Pulse Delay resistor. The delay is adjustable from zero to 25 seconds.

Low Speed

In the LO position of the Wiper/Washer Switch, battery voltage is applied at terminal C of the Wiper Motor Module as well as terminal B, through the DK GRN and GRY wires. The Park Relay is again energized and battery voltage is applied to the Park Relay contacts from terminal C and the Wiper Motor which runs continuously.

High Speed

With the Wiper Switch in the HI position, battery voltage is supplied directly to the Wiper Motor, without passing through the Park Relay contacts. The input (PPL wire) is connected to a separate armature brush for high speed operation.

When turned off from HI, the wipers complete the last sweep at low speed and park. To do this, the Wiper Motor receives battery voltage in the OFF position of the Wiper Switch which is applied through the DK GRN wire to terminal C of C1. The Park relay is deenergized when the Wiper/Washer Switch is moved to OFF, but the contacts remain closed until the wipers reach the parked position.

The Wiper Motor is protected by a Circuit Breaker. If the wipers are obstructed, by snow or ice for example, the circuit breaker will open the circuit. The Circuit Breaker resets automatically when it cools.

Washer

When the Washer Switch is held ON, battery voltage is applied to the Control Board through the PNK and GRY wires. The Park Relay is energized by the battery voltage at terminal B. The Control Board turns on the Washer and Wiper Motors by closing contacts A and B. The Control Board turns the Wiper Motor OFF approximately 6 seconds after it interrupts power to the Washer Motor. If the Wipers had been in Pulse, LO, or HI, they would return to that operation after the wash cycle.

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 that of LO.

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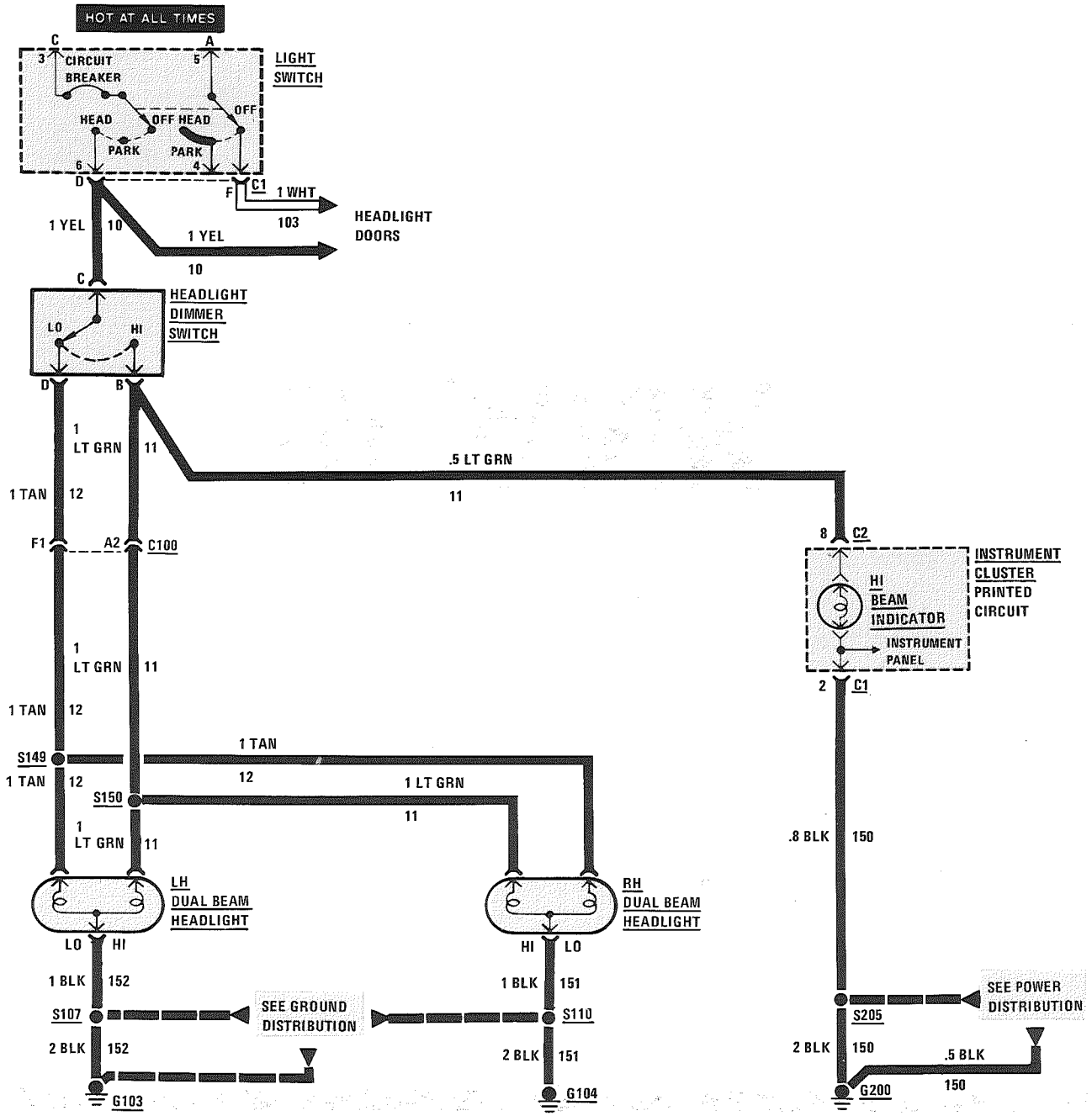
HOT AT ALL TIMES
C
A
3
CIRCUIT BREAKER
5
LIGHT SWITCH
HEAD
OFF HEAD
OFF
PARK
PARK
6
4
D
F
C1
1 WHT
103
HEADLIGHT DOORS
1 YEL
10
1 YEL
10
C
HEADLIGHT DIMMER SWITCH
LO
HI
D
B
1 LT GRN
11
.5 LT GRN
11
1 TAN
12
F1
A2
C100
8
C2
INSTRUMENT CLUSTER PRINTED CIRCUIT
HI BEAM INDICATOR
INSTRUMENT PANEL
2
C1
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11
1 TAN
12
S149
1 TAN
12
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12
S150
1 LT GRN
11
1 LT GRN
11
.8 BLK
150
LH DUAL BEAM HEADLIGHT
RH DUAL BEAM HEADLIGHT
LO
HI
HI
LO
1 BLK
152
1 BLK
151
SEE POWER DISTRIBUTION
S107
SEE GROUND DISTRIBUTION
S110
S205
2 BLK
152
2 BLK
151
2 BLK
150
.5 BLK
150
G103
G104
G200

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

1. If Headlights on one side are on dimly, check the ground on that side.
2. If Hi Beams do not light, but the Hi Beam Indicator lights, check LT GRN (11) wire for an open (see schematic).
3. If one Headlight doesn't work, check the Headlight, connections, and wires to the Headlight.
4. If the Headlights do not turn off, replace the Light Switch.

- **Go to System Diagnosis for diagnostic tests.**

SYSTEM DIAGNOSIS

- **Diagnostic steps for the symptoms listed in the following table are listed after the table.**

SYMPTOM TABLE

A: All Headlights are inoperative or intermittent
B: Lo Beams on both sides are inoperative or Hi Beams and Hi Beam Indicator are inoperative

COMPONENT LOCATION

		Page-Figure
Headlight Dimmer Switch	Behind I/P, on LH upper side of steering column.	201- 9-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A
G103 (VIN E)	RH inner fender panel, near battery	201- 3-B
G104	On radiator support, behind RH headlights	201-16-A
G200	Behind I/P, left of steering column	201-10-A
S107	Front lights harness, behind LH headlights	201-16-A
S110	Front lights harness, behind RH headlights	201-16-A
S149	Front lights harness, behind LH headlights	201-16-A
S150	Front lights harness, behind LH headlights	201-16-A
S205	I/P harness, behind instrument cluster	201-10-A

A: ALL HEADLIGHTS ARE INOPERATIVE OR INTERMITTENT (TABLE 1)

Connect: TEST LAMP
At: LIGHT SWITCH CONNECTOR C1 (Connected)
Condition:
- **Light Switch: HEAD**

Connect Between	Correct Result	For Diagnosis
C (RED) & Ground	Test Lamp lights	See 1
D (YEL) & Ground	Test Lamp lights	Go to Table 2

- If both results are correct, go to Test B.

1. Check Fusible Link A and RED (2) wire for an open (see Power Distribution).

A: ALL HEADLIGHTS ARE INOPERATIVE OR INTERMITTENT (TABLE 2)

Connect: FUSED JUMPER
At: LIGHT SWITCH CONNECTOR C1 (Disconnected)
Conditions:
- **Put a 15 amp fuse in the fused jumper**
- **Headlight Dimmer Switch: LO**

Connect Between	Correct Indication	For Diagnosis
C (RED) & D (YEL)	Headlights light	See 1
• Headlight Dimmer Switch: HI		
C (RED) & D (YEL)	Hi Beams light	See 1

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- If results are correct, replace Light Switch.

1. Check for short to ground in wiring to Headlights.

B: LO BEAMS ON BOTH SIDES ARE INOPERATIVE OR HI BEAMS AND HI BEAM INDICATOR ARE INOPERATIVE

Connect: TEST LAMP
At: HEADLIGHT DIMMER SWITCH CONNECTOR (Connected)
Conditions:
- **Light Switch: HEAD**
- **Headlight Dimmer Switch: LO**

Connect Between	Correct Result	For Diagnosis
C (YEL) & Ground	Test Lamp lights	See 1
D (TAN) & Ground	Test Lamp lights	See 2
• Headlight Dimmer Switch: HI		
B (LT GRN) & Ground	Test Lamp lights	See 2

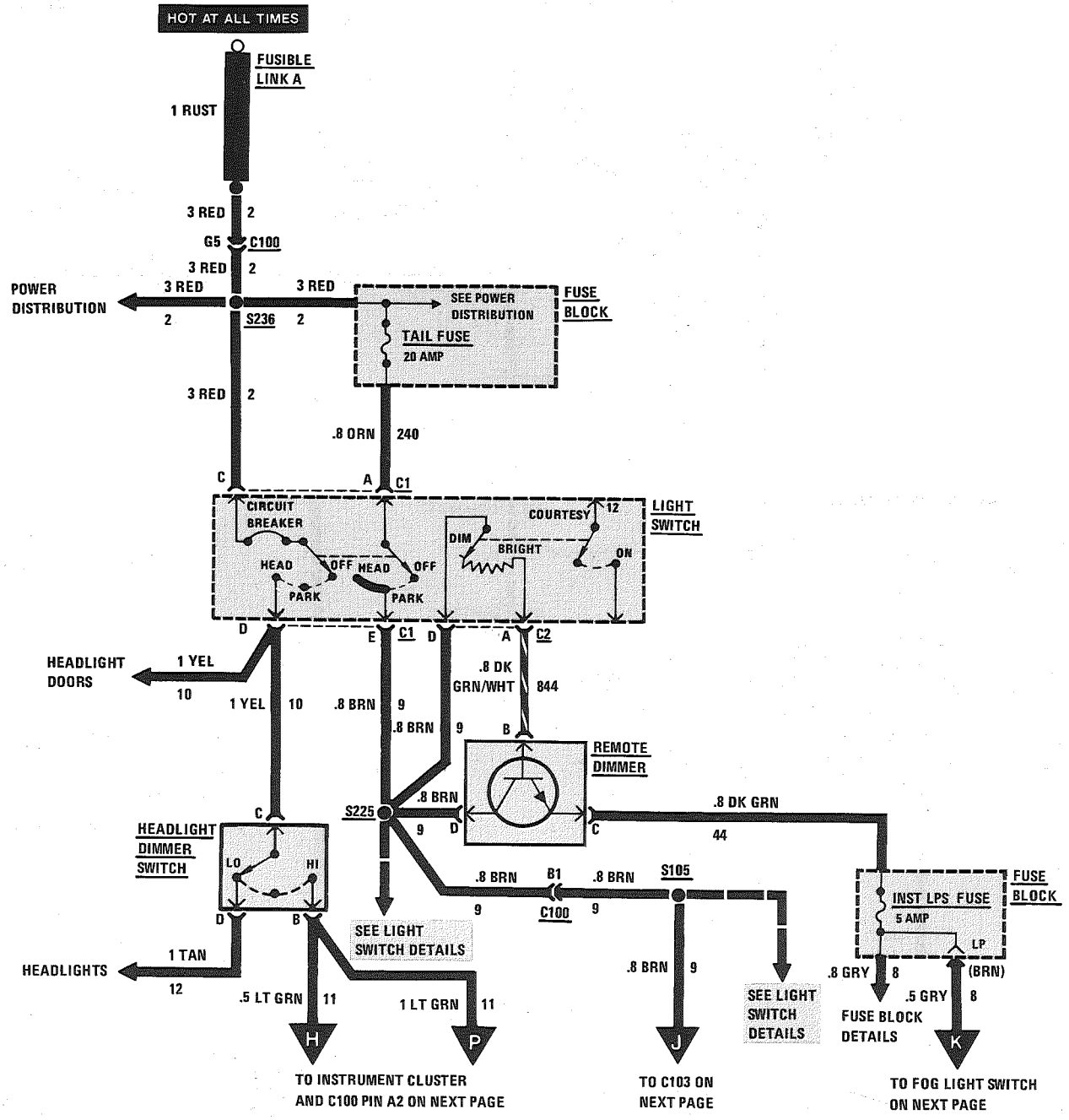
- If all results are correct, check wiring to lights for an open.

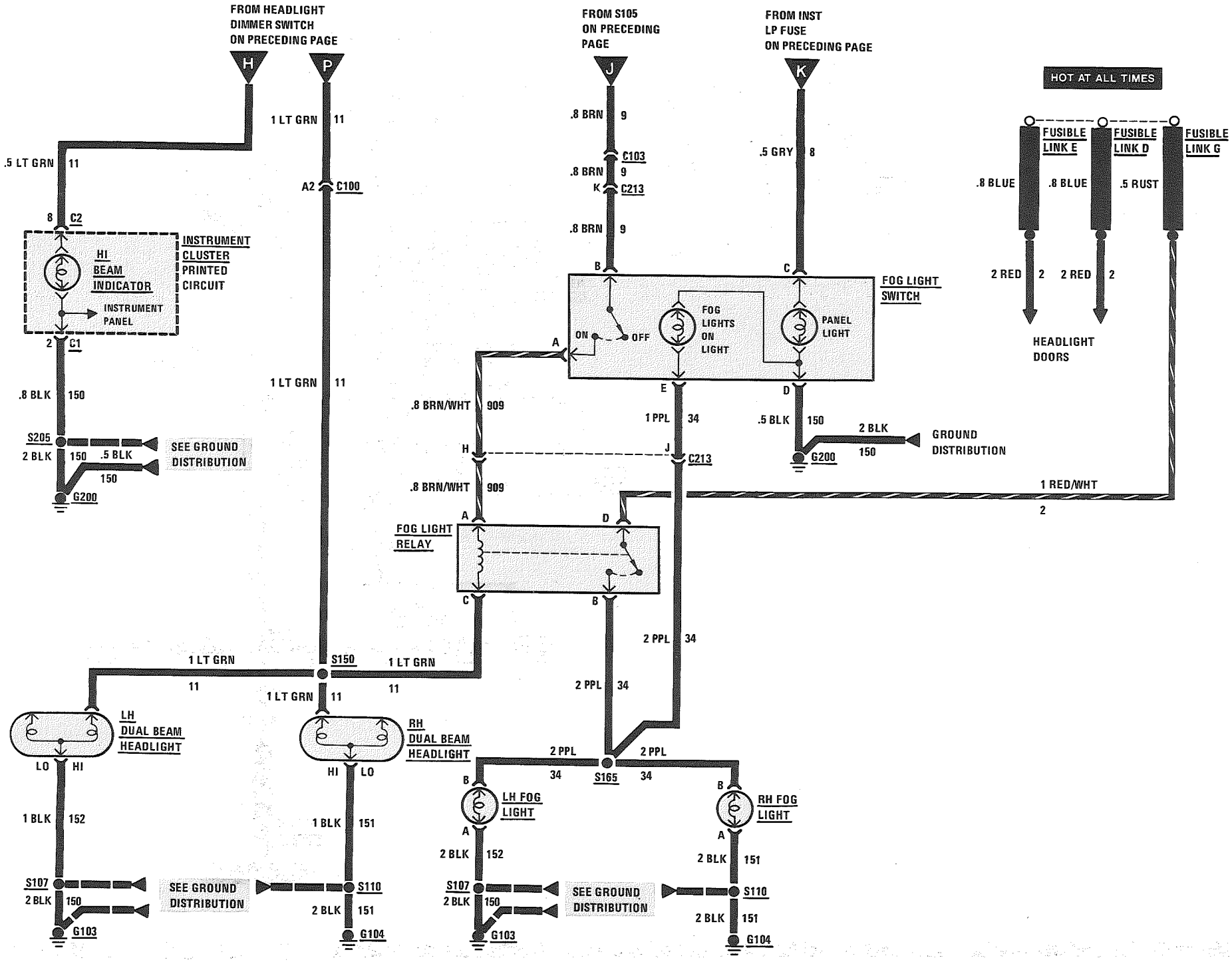
1. Check YEL (10) wire for an open.
2. Replace Headlight Dimmer Switch.

CIRCUIT OPERATION

Voltage is applied to the Light Switch at all times. The Light 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 Light Switch is in HEAD, the Headlight Dimmer Switch directs voltage to either the Lo Beams or Hi Beams. The Hi Beam Indicator also receives voltage along with the Hi Beams.

HEADLIGHTS: FOG LIGHTS




FROM HEADLIGHT DIMMER SWITCH ON PRECEDING PAGE
H
P
.5 LT GRN 11
1 LT GRN 11
A2 C100
8 C2
HI BEAM INDICATOR
INSTRUMENT CLUSTER PRINTED CIRCUIT
INSTRUMENT PANEL
2 C1
.8 BLK 150
S205
2 BLK 150
.5 BLK 150
SEE GROUND DISTRIBUTION
G200
1 LT GRN 11
S150
1 LT GRN 11
1 LT GRN 11
1 LT GRN 11
LH DUAL BEAM HEADLIGHT
LO HI
1 BLK 152
S107
2 BLK 150
SEE GROUND DISTRIBUTION
G103
HI LO
1 BLK 151
S110
2 BLK 151
G104
RH DUAL BEAM HEADLIGHT
FROM S105 ON PRECEDING PAGE
J
.8 BRN 9
C103
.8 BRN 9
K C213
.8 BRN 9
B
FROM INST LP FUSE ON PRECEDING PAGE
K
.5 GRY 8
C
FOG LIGHT SWITCH
ON
OFF
FOG LIGHTS ON LIGHT
PANEL LIGHT
A
E
D
.8 BRN/WHT 909
1 PPL 34
.5 BLK 150
2 BLK 150
G200
GROUND DISTRIBUTION
H
J C213
.8 BRN/WHT 909
A
D
FOG LIGHT RELAY
C
B
1 RED/WHT 2
2 PPL 34
2 PPL 34
2 PPL 34
2 PPL 34
S165
B
LH FOG LIGHT
A
2 BLK 152
S107
2 BLK 150
SEE GROUND DISTRIBUTION
G103
B
RH FOG LIGHT
A
2 BLK 151
S110
2 BLK 151
G104
HOT AT ALL TIMES
FUSIBLE LINK E
FUSIBLE LINK D
FUSIBLE LINK G
.8 BLUE
.8 BLUE
.5 RUST
2 RED 2
2 RED 2
HEADLIGHT DOORS

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

1. Check that the Headlights and Park Lights work properly before troubleshooting the Fog Lights.
2. If one Fog Light doesn't work, check the Fog Light, connections, and wires to the Fog Light.

- **Go to System Diagnosis for diagnostic tests.**

SYSTEM DIAGNOSIS

- **Do the following test if the Fog Lights do not operate.**

COMPONENT LOCATION

		Page-Figure
Fog Light Relay	LH front of engine compartment, on fender	201-16-A
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Fusible Link A (VIN E)	Lower RH side of engine, at Starter Solenoid	201- 2-A
Fusible Link A (VIN F) (VIN 8)	Lower RH side of engine, at Starter Solenoid	201- 6-B
Fusible Link A (VIN S)	Lower RH side of engine, at Starter Solenoid	201- 1-A
Fusible Link D	Front lights harness, near LH side of dash	201-16-A
Fusible Link E	Front lights harness, near LH side of dash	201-16-A
Fusible Link G	Front lights harness, near LH side of dash	201-16-A
Headlight Dimmer Switch	Behind I/P, on LH upper side of steering column	201- 9-A
Remote Dimmer	RH side of steering column, on I/P retainer	201-10-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C103 (1 cavity)	In front lights harness, LH rear corner of engine compartment	201-15-C
C213 (3 cavities)	Behind LH side of I/P, near light switch	201-10-C
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A
G104	On radiator support, behind RH headlights	201-16-A
G200	Behind I/P, left of steering column	201-10-A
S105	Front lights harness, behind LH headlights	201-16-A
S107	Front lights harness, behind LH headlights	201-16-A
S110	Front lights harness, behind RH headlights	201-16-A
S150	Front lights harness, behind LH headlights	201-16-A
S165	Forward lights harness, LH front corner of engine compartment	201-15-B
S205	I/P harness, behind instrument cluster	201-10-A
S225	I/P harness, behind instrument cluster	201-10-A
S236	I/P harness, below light switch	201-10-A

FOG LIGHTS DO NOT OPERATE

Measure: VOLTAGE
At: FOG LIGHT RELAY CONNECTOR (Disconnected)
Conditions:
- **Light Switch: PARK**
- **Fog Light Switch: ON**

Measure Between	Correct Voltage	For Diagnosis
A (BRN/WHT) & Ground	Battery	See 1
A (BRN/WHT) & C (LT GRN)	Battery	See 2
D (RED/WHT) & Ground	Battery	See 3
D (RED/WHT) & B (PPL)	Battery	See 4

- If all voltages are correct, replace the Fog Light Relay.

1. Check the Fog Light Switch and BRN (9) and BRN/WHT (909) wires for an open (see schematic).
2. Check LT GRN (11) wire for an open.
3. Check Fusible Link G and RED/WHT (2) wire for an open.
4. Check PPL (34) wire for an open.

CIRCUIT OPERATION

The Fog Lights are controlled by the Light Switch. They can be turned on with the Park or Headlights on. With the Hi Beams on, the Fog Lights go out.

The Fog Light Relay controls battery voltage to the Fog Lights. The Fog Light Switch applies voltage to the relay coil. The relay coil is grounded through the Hi Beam filaments. When the Hi Beams come on, battery voltage is at both sides of the relay coil. The relay and the Fog Lights turn off.

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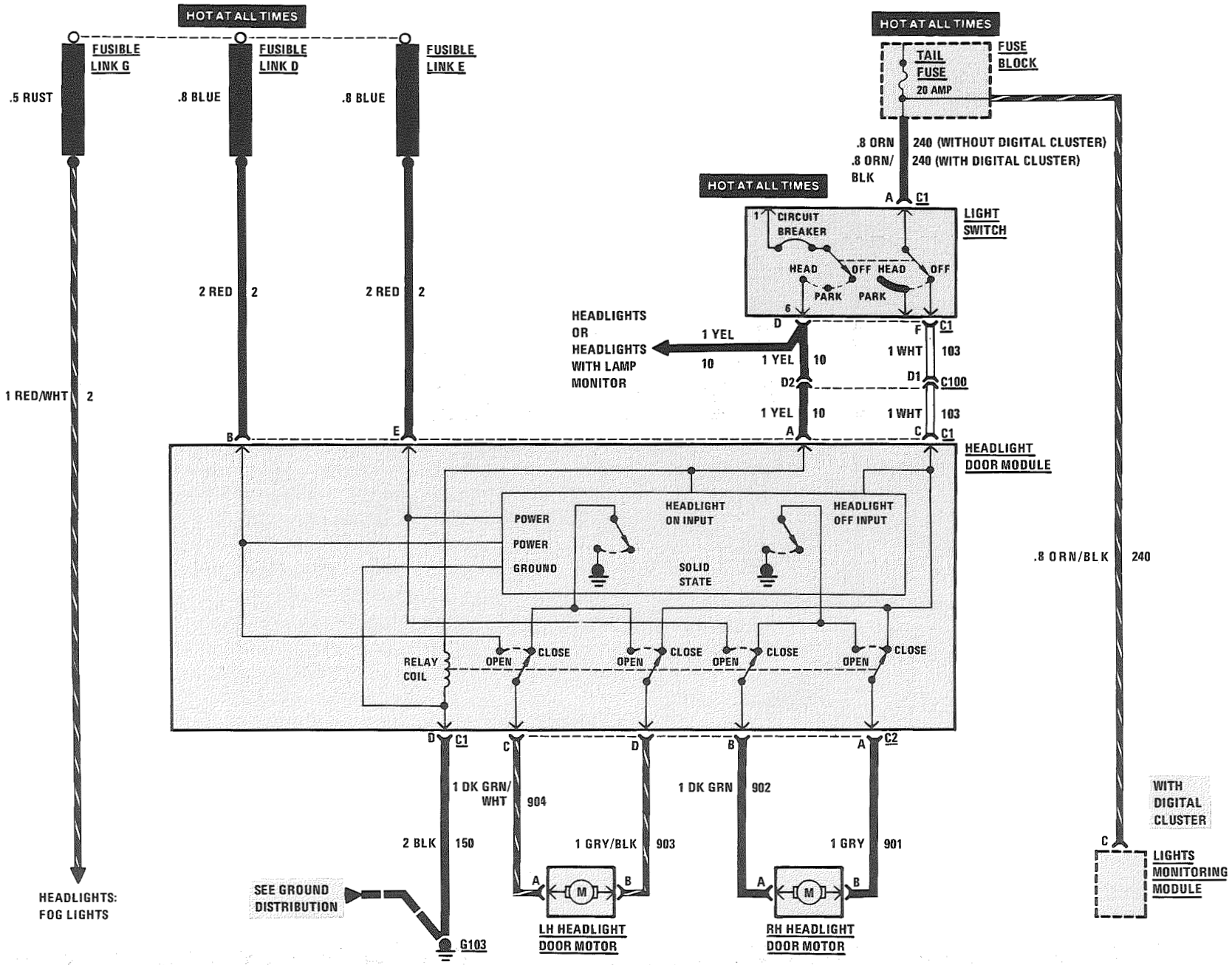
HEADLIGHT DOORS



SYSTEM CHECK

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

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
Put Light Switch in HEAD	Headlight Doors open and Headlights light
Put Light Switch in PARK	Headlights go out, Headlight Doors stay open
Put Light Switch in OFF	Headlight Doors close

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

SYSTEM DIAGNOSIS

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

SYMPTOM TABLE

A: Neither Headlight Door operates properly

B: Left Headlight Door does not operate properly

C: Right Headlight Door does not operate properly

COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Fusible Link D	Front lights harness, near LH side of dash	201-16-A
Fusible Link E	Front lights harness, near LH side of dash	201-16-A
Fusible Link G	Front lights harness, near LH side of dash	201-16-A
Headlight Door Module	LH front of dash	201-16-A
LH Headlight Door Motor	To right of LH headlight	201-16-A
Lights Monitoring Module	Behind I/P, at base of steering column	
RH Headlight Door Motor	To left of RH headlight	201-16-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A

A: NEITHER HEADLIGHT DOOR OPERATES PROPERLY

Connect: TEST LAMP
At: HEADLIGHT DOOR MODULE CONNECTOR C1 (Disconnected)
Condition:
- **Light Switch: OFF**

Connect Between	Correct Result	For Diagnosis Of Incorrect Results
B (RED) & Ground	Test Lamp lights	See 1
E (RED) & Ground	Test Lamp lights	See 1
C (WHT) & Ground	Test Lamp lights	See 2
C (WHT) & D (BLK)	Test Lamp lights	See 3
• Light Switch: HEAD		

(Continued in next column)

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A (YEL) & Ground	Test Lamp lights	See 4

- If all results are correct, replace Headlight Door Module.

1. Check RED (2) wire and Fusible Link D or E for an open (see schematic).
2. Check TAIL Fuse, Light Switch, and WHT (103) wire for an open (see schematic).
3. Check BLK (150) wire for an open.
4. Check YEL (10) wire for an open. Refer to Headlights (8A-100) for diagnosis if wire is OK.

B: LEFT HEADLIGHT DOOR DOES NOT OPERATE PROPERLY

1. Check for mechanical binding.
2. Remove connector C2 from the Headlight Door Module. (Leave C1 connected.) Connect fused jumpers from terminal D (GRY/BLK) of the connector to terminal A of the Module, and from terminal C (DK GRN/WHT) of the connector to terminal B of the Module. Operate the Headlights.

- If LH Headlight Door works, replace Headlight Door Module.
- If no Headlight Door works, check wiring to the motor. Replace the motor as necessary.

C: RIGHT HEADLIGHT DOOR DOES NOT OPERATE PROPERLY

1. Check for mechanical binding.
2. Remove connector C2 from the Headlight Door Module. (Leave C1 connected.) Connect fused jumpers from terminal B (DK GRN) of the connector to terminal C of the Module, and from terminal A (GRY) of the connector to terminal D of the module. Operate the Headlights.

- If RH Headlight Door works, replace Headlight Door Module.
- If no Headlight Door works, check wiring to the motor. Replace the motor as necessary.

CIRCUIT OPERATION

Voltage to open the Headlight Doors and to power the solid state circuitry is applied to the Headlight Door Module at all times at terminals B and E of connector C1. With the Light Switch in OFF, voltage to close the Headlight Doors is applied to terminal C of connector C1. With the Light Switch in HEAD, voltage is applied to terminal A of connector C1 to allow the Headlight Doors to open.

When the Light Switch is moved to HEAD, voltage is applied to the Headlight Door Motors. Ground is provided for the motors through the solid state circuitry until the Headlight doors are open.

When the Light Switch is moved to OFF, voltage is reversed across the Headlight Door Motors. The motors run in the opposite direction to close the Headlight Doors. When the doors are closed, the solid state circuitry senses the motors are not operating and ground is removed.

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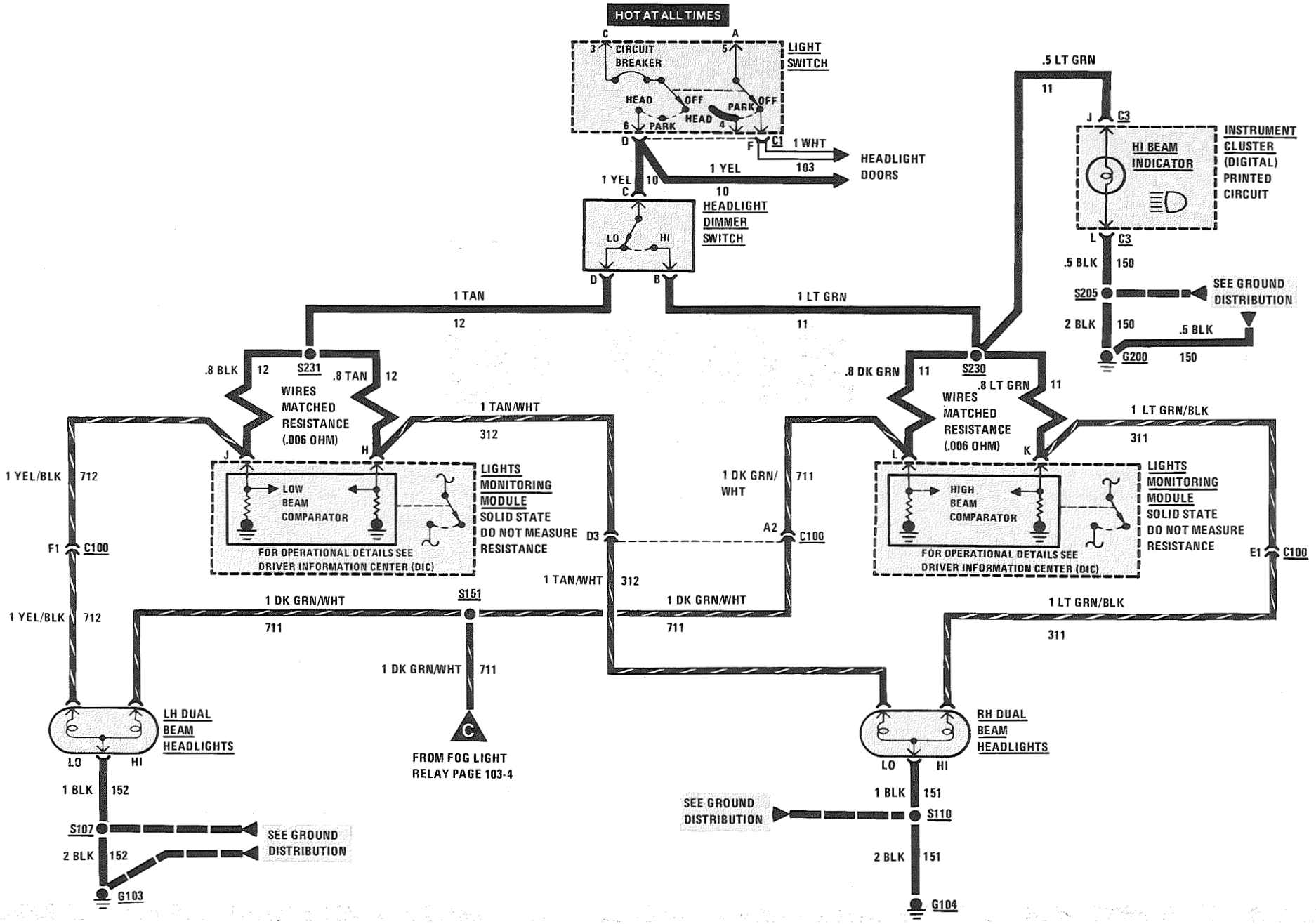
HEADLIGHTS WITH LAMP MONITOR



HEADLIGHTS WITH LAMP MONITOR

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

1. If the Headlight on one side is dimly lit, check the ground on that side.
2. If the Hi Beam Indicator does not light, but the High Beams operate, check the LT GRN (11) wire for an open (see schematic).
3. If one Headlight doesn't work, check the connections, the Headlight, and the wires to the Headlight.
4. If the Headlights do not turn off, replace the Light Switch.

- **Go to the System Diagnosis for diagnostic tests.**

SYSTEM DIAGNOSIS

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

SYMPTOM TABLE

SYMPTOM	FOR DIAGNOSIS
All Headlights inoperative or intermittent	Do Test A
Low beams on both sides are inoperative	Do Test B
High Beams and Hi Beam Indicator are inoperative	Do Test B

(Continued in next column)

COMPONENT LOCATION

		Page-Figure
Headlight Dimmer Switch	Behind I/P, on LH upper side of steering column.	201- 9-A
Lights Monitoring Module	Behind I/P, at base of steering column	
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A
G104	On radiator support, behind RH headlights	201-16-A
G200	Behind I/P, left of steering column	201-10-A
S107	Front lights harness, behind LH headlights	201-16-A
S110	Front lights harness, behind RH headlights	201-16-A
S151	Front lights harness, lower LH side of engine compartment	201-16-A
S205	I/P harness, behind instrument cluster	201-10-A
S230	I/P harness, behind LH side of I/P	201-10-A
S231	I/P harness, above Fuse Block	201-10-A

(Continued from previous column)

A Headlight is out, but no warning message is displayed on the Instrument Panel	Refer to Driver Information Center (DIC), page 86-0
A Headlight out warning message is displayed but all Headlights are functioning properly	Refer to Driver Information Center (DIC), page 86-0

A: LIGHT SWITCH TEST (TABLE 1)

Connect: TEST LAMP
At: LIGHT SWITCH CONNECTOR (Connected)
Condition:
- **Light Switch: HEAD**

Connect Between	Correct Result	For Diagnosis Of Incorrect Results
C (RED) & Ground	Test Lamp lights	See 1
D (YEL) & Ground	Test Lamp lights	Go to Table 2

- If both results are correct, go to Test B.

1. Check Fusible Link A and RED (2) wire for an open.

HEADLIGHTS WITH LAMP MONITOR

A: LIGHT SWITCH TEST (TABLE 2)

Connect: FUSED JUMPER
At: LIGHT SWITCH CONNECTOR (Disconnected)
Conditions:
- **Put a 15 amp fuse in the fused jumper**
- **Dimmer Switch: LO**

Jumper Between	Correct Result	For Diagnosis Of Incorrect Results
C (RED) & D (YEL)	Headlights light	See 1
• Put Dimmer Switch in HI		
C (RED) & D (YEL)	High Beams light	See 1

- If results are correct, replace Light Switch.

1. Check for short to ground in wiring to Headlights.

B: DIMMER SWITCH TEST

Connect: TEST LAMP
At: HEADLIGHT DIMMER SWITCH CONNECTOR (Connected)
Conditions:
- **Light Switch: HEAD**
- **Dimmer Switch: LO**

(Continued in next column)

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Connect Between	Correct Result	For Diagnosis Of Incorrect Results
C (YEL) & Ground	Test Lamp lights	See 1
D (TAN) & Ground	Test Lamp lights	See 2
• Put Dimmer Switch in HI		
B (LT GRN) & Ground	Test Lamp lights	See 2

- If all results are correct, check wiring to lights for an open.

1. Check YEL (10) wire for an open.
2. Replace Headlight Dimmer Switch.

CIRCUIT OPERATION

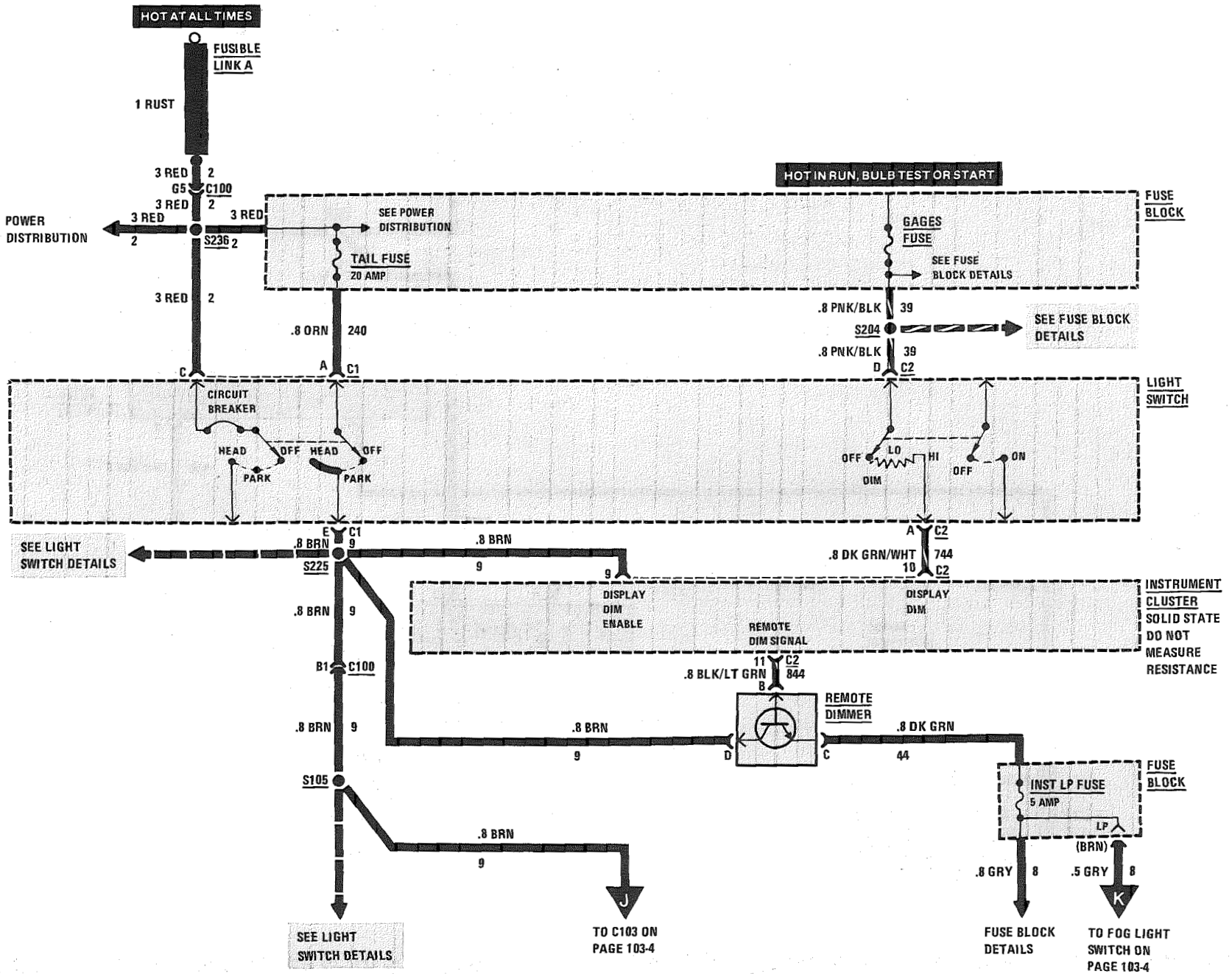
Voltage is applied to the Light Switch through the Headlights Circuit Breaker. When the switch is closed in HEAD, voltage is applied through the YEL wire to the Headlight Dimmer Switch. With the Dimmer Switch in LO, voltage is applied through the TAN and BLK matched resistance wires to the Lights Monitoring Module and to the LH and RH Low Beam Headlights. The Lo Beam Headlights turn on.

If either of the Lo Beam Headlights is burned out, the Lo Beam Comparator detects the open low beam filament, and the Driver Information Center (DIC) displays the fault.

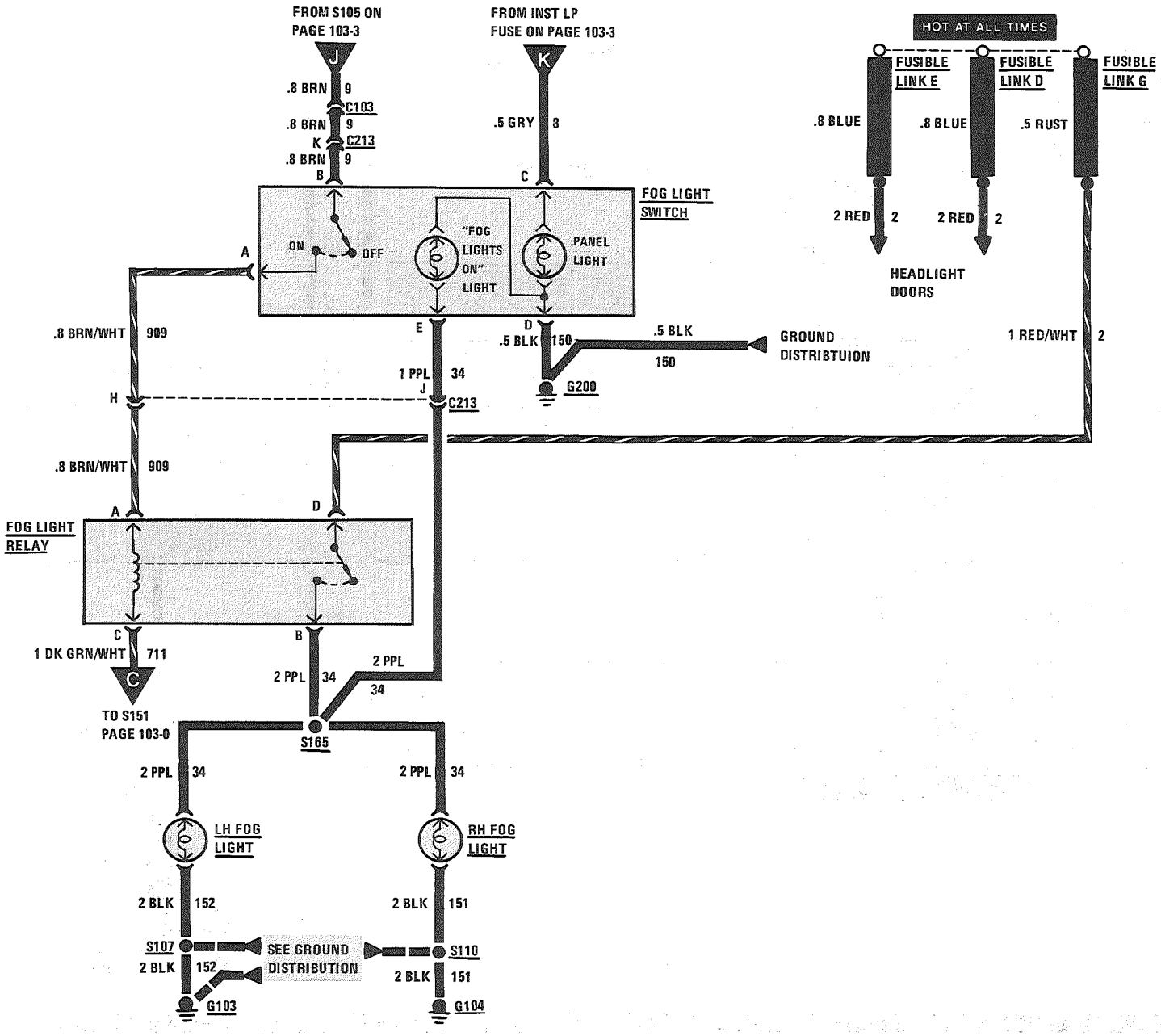
With the Headlight Dimmer Switch in HI, voltage is applied through the LT GRN wire and the matched resistance wires to the Lights Monitoring Module and to the LH and RH Hi Beam Headlights. The Hi Beam Headlights turn on. Voltage is also applied through the LT GRN wire to the Hi Beam Indicator. The Indicator lights whenever voltage is applied to the high beams.

If either of the Hi Beam Headlights is burned out, the Hi Beam Comparator detects the open high beam filament and the Driver Information Center (DIC) displays the fault.

HEADLIGHTS WITH LAMP MONITOR: FOGLIGHTS



HEADLIGHTS WITH LAMP MONITOR: FOGLIGHTS



HEADLIGHTS WITH LAMP MONITOR: FOG LIGHTS

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

1. Check that the Headlights and Park Lights work properly before troubleshooting the Fog Lights.
2. If one Fog Light doesn't work, check the Fog Light, connections, and wires to the Fog Light.
3. If the Fog Light Switch is not illuminated when the Park Lights are on, check the GRY (8) wire.
4. If the FOG LIGHTS ON Light and the Panel Light do not operate, check the BLK (150) wire for an open.

- **Go to System Diagnosis for diagnostic tests.**

SYSTEM DIAGNOSIS

- **Do the test below if the Fog Lights do not operate.**

FOG LIGHTS DO NOT OPERATE

Measure: VOLTAGE
At: FOG LIGHT RELAY CONNECTOR (Disconnected)
Conditions:
- **Light Switch: PARK**
- **Fog Light Switch: ON**

Measure Between	Correct Voltage	For Diagnosis
A (BRN/WHT) & Ground	Battery	See 1

(FOG LIGHTS DO NOT OPERATE continued on next page)

COMPONENT LOCATION

		Page-Figure
Fog Light Relay	LH front of engine compartment, on fender	201-16-A
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Fusible Link A (VIN E)	Lower RH side of engine, at Starter Solenoid	201- 2-A
Fusible Link A (VIN F) (VIN 8)	Lower RH side of engine, at Starter Solenoid	201- 6-B
Fusible Link A (VIN S)	Lower RH side of engine, at Starter Solenoid	201- 1-A
Fusible Link D	Front lights harness, near LH side of dash	201-16-A
Fusible Link E	Front lights harness, near LH side of dash	201-16-A
Fusible Link G	Front lights harness, near LH side of dash	201-16-A
Remote Dimmer	RH side of steering column, on I/P retainer	201-10-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C103 (1 cavity)	In front lights harness, LH rear corner of engine compartment	201-15-C
C213 (3 cavities)	Behind LH side of I/P, near light switch	201-10-C
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A
G104	On radiator support, behind RH headlights	201-16-A
G200	Behind I/P, left of steering column	201-10-A
S105	Front lights harness, behind LH headlights	201-16-A
S107	Front lights harness, behind LH headlights	201-16-A
S110	Front lights harness, behind RH headlights	201-16-A
S165	Forward lights harness, LH front corner of engine compartment	201-15-B
S204	I/P harness, behind instrument cluster	201-10-A
S225	I/P harness, behind instrument cluster	201-10-A
S236	I/P harness, below light switch	201-10-A

(FOG LIGHTS DO NOT OPERATE continued from previous page)

A (BRN/WHT) & C (DK GRN/WHT)	Battery	See 2
D (RED/WHT) & Ground	Battery	See 3
D (RED/WHT) & B (PPL)	Battery	See 4

- **If all voltages are correct, replace the Fog Light Relay.**

1. Check the Fog Light Switch and BRN (9) and BRN/WHT (909) wire for an open (see schematic).
2. Check DK GRN/WHT (711) wire for an open.
3. Check Fusible Link G and RED/WHT (2) wire for an open.
4. Check PPL (34) wire for an open.

CIRCUIT OPERATION

The Fog Lights are controlled by the Light Switch. They can be turned on with the Park or Headlights on. With the Hi Beams on, the Fog Lights go out.

The Fog Light Relay controls battery voltage to the Fog Lights. The Fog Light Switch applies voltage to the relay coil. The relay coil is grounded through the Hi Beam filaments. When the Hi Beams come on, battery voltage is at both sides of the relay coil. The relay and the Fog Lights turn off.

When the Fog Light Relay is energized, voltage is also applied to the FOG LIGHTS ON Light in the Fog Light Switch. The FOG LIGHTS ON Light is illuminated.

If the Park Lights are on, voltage is applied to the Panel Light in the Fog Light Switch. The light turns on.

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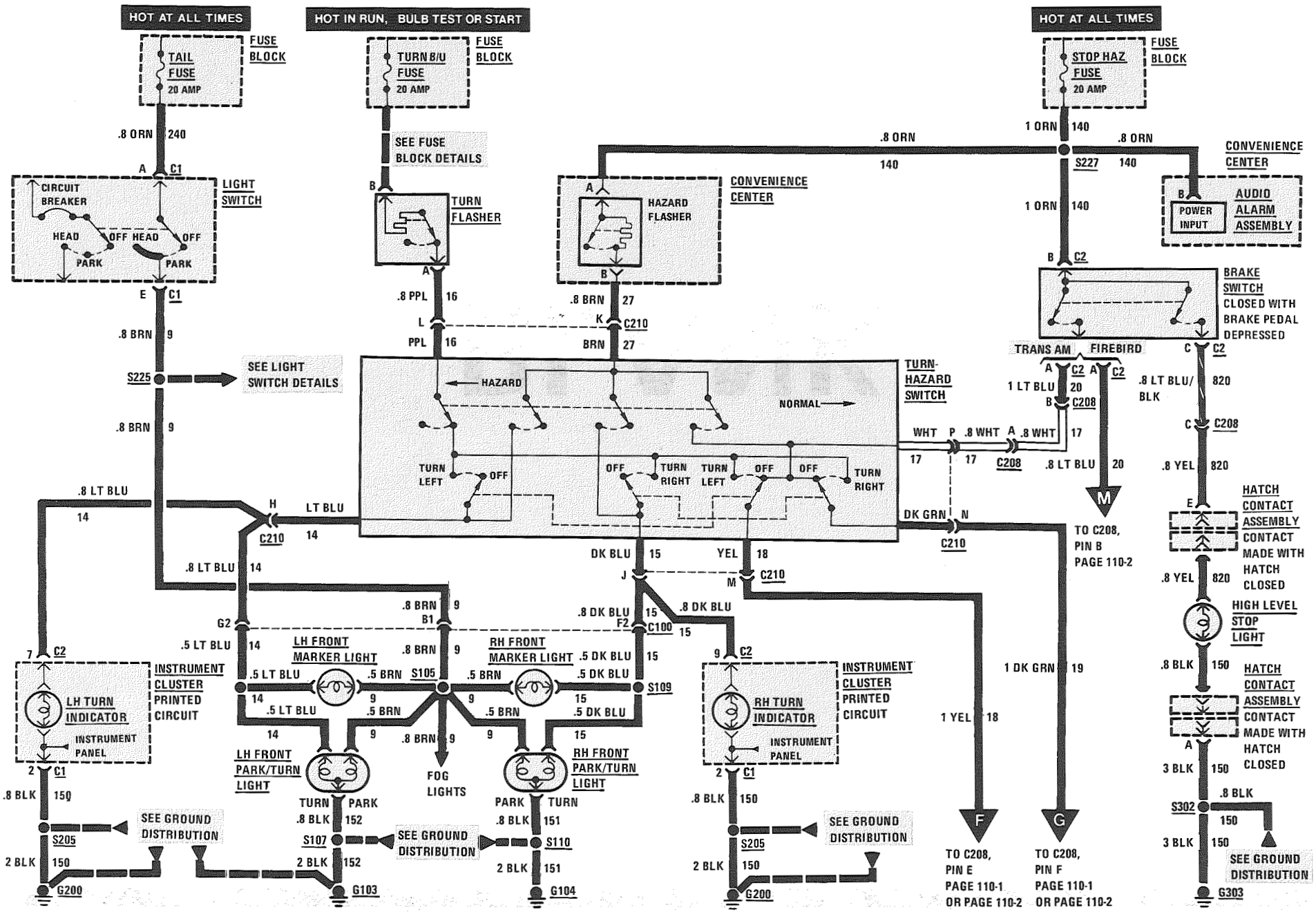
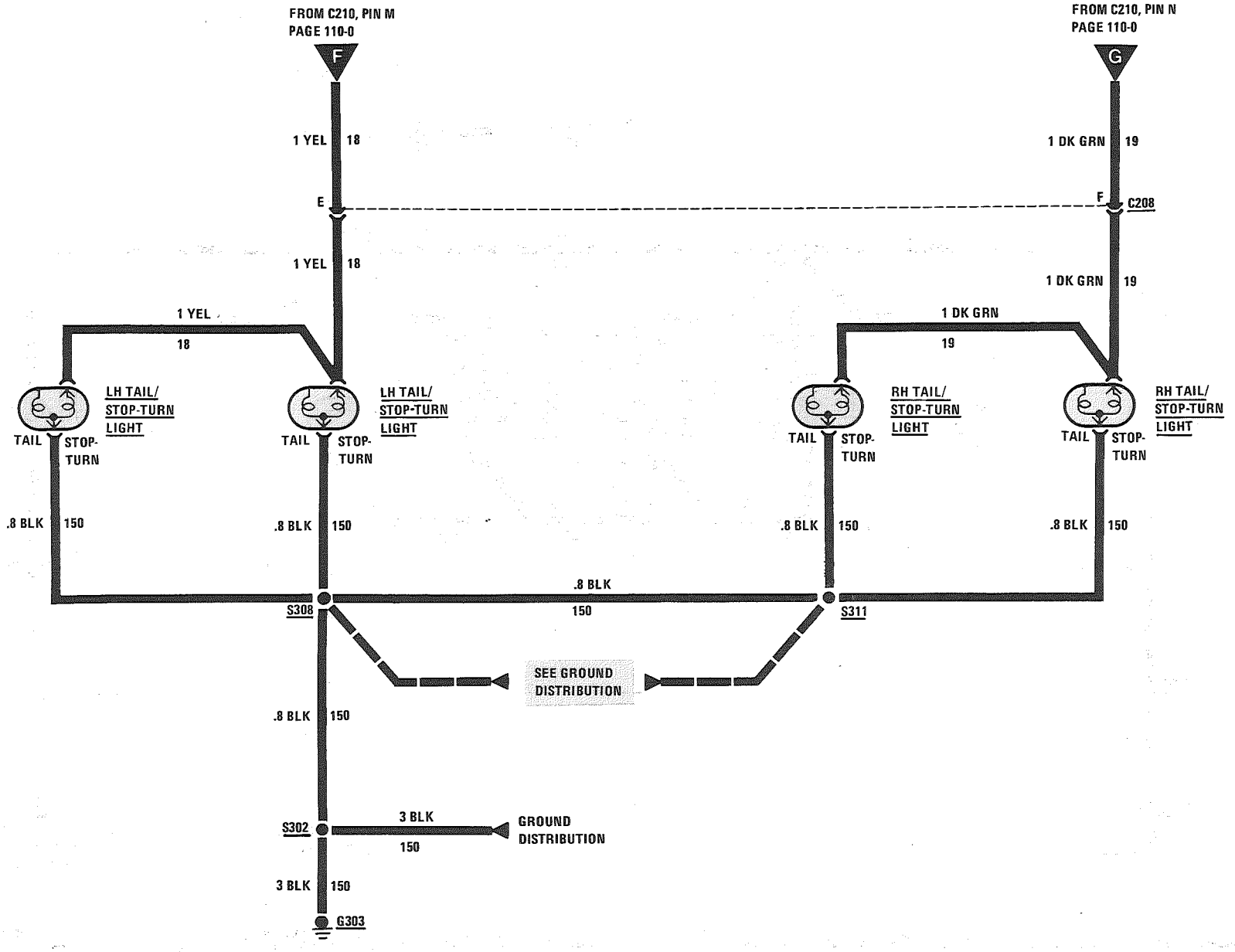
EXTERIOR LIGHTS: TURN/HAZARD/FRONT PARK/FRONT MARKER/STOP/HIGH LEVEL STOP LIGHT



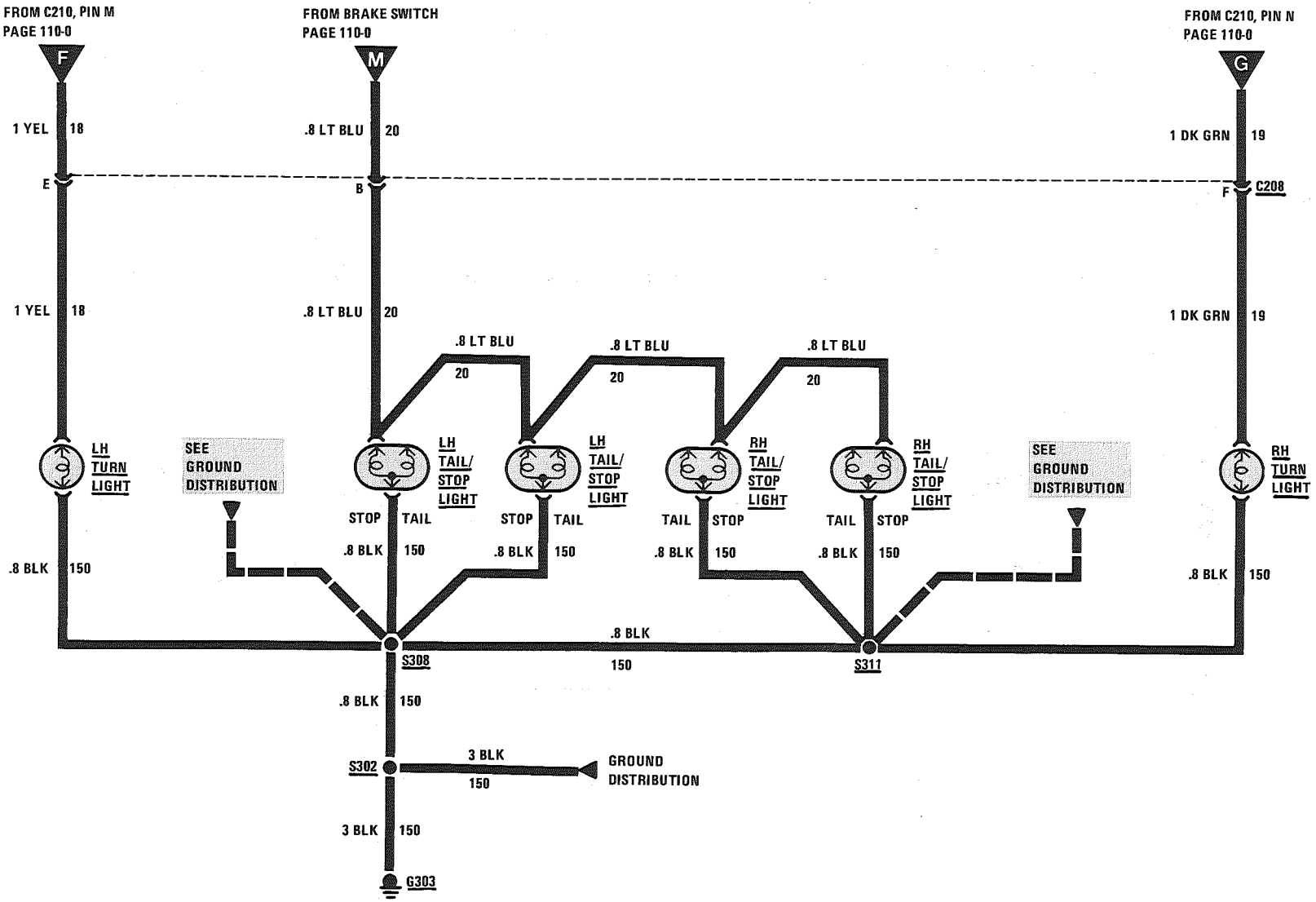
EXTERIOR LIGHTS: TURN/HAZARD/STOP

TRANS AM



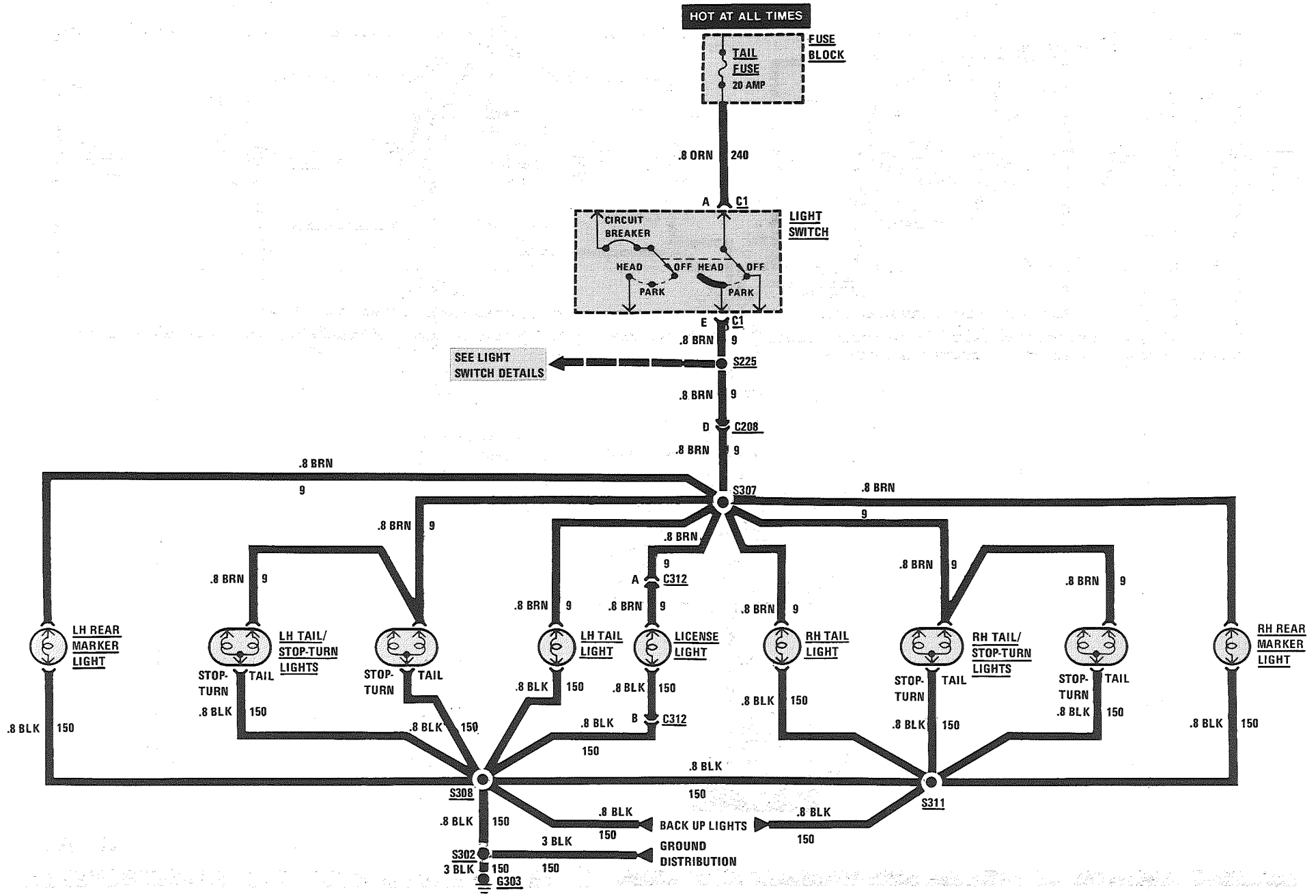
EXTERIOR LIGHTS: TURN/HAZARD/STOP

FIREBIRD



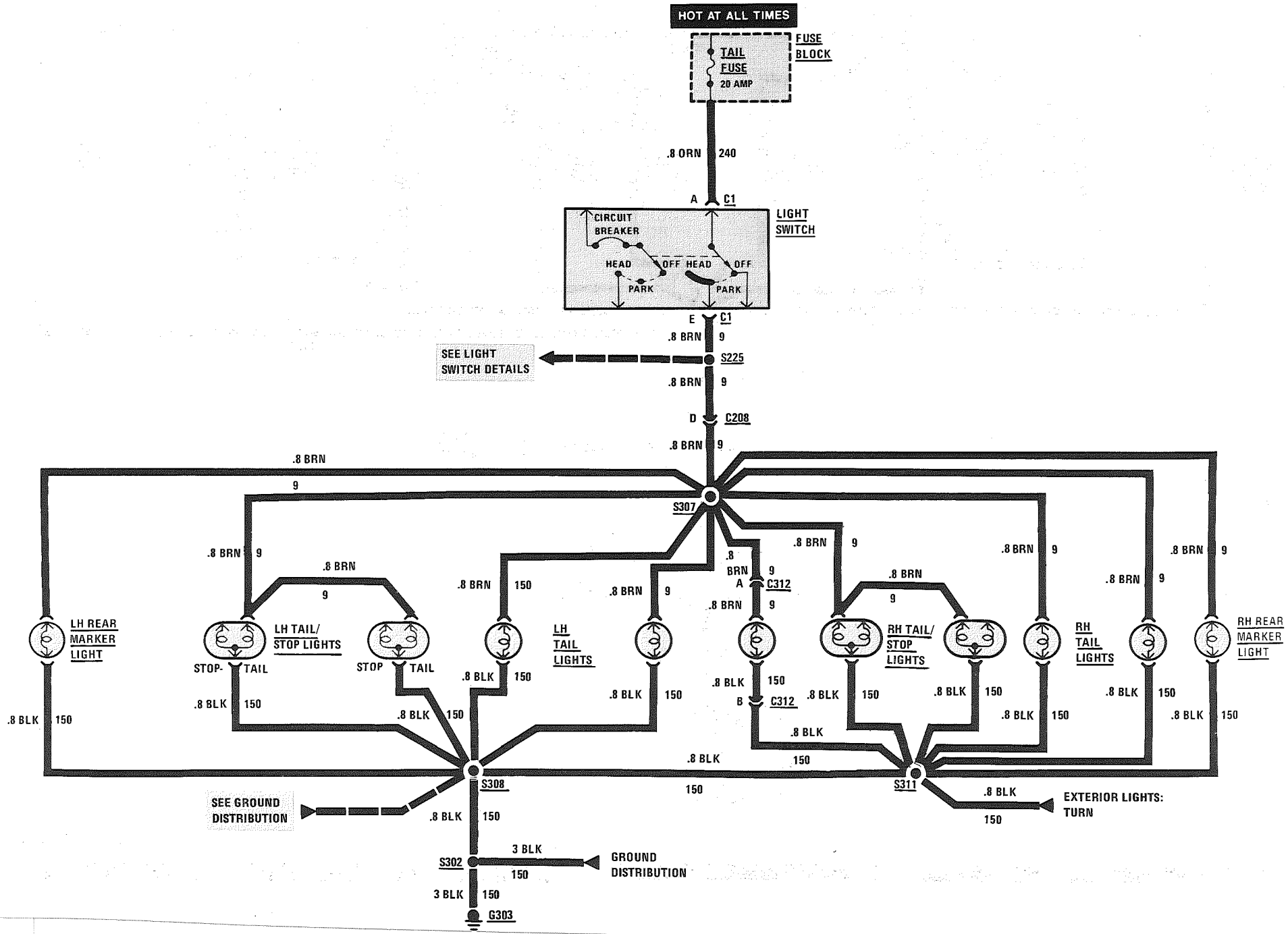
EXTERIOR LIGHTS: TAIL/REAR MARKER/LICENSE

TRANS AM



EXTERIOR LIGHTS: TAIL/REAR MARKER/LICENSE

FIREBIRD



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

Turn Lights

1. Check the TURN B/U Fuse by operating the Back Up Lights.
2. If the Turn Indicator and Front Turn Light on one side are inoperative, check the connection at C210. Replace the Turn-Hazard Switch as necessary.
3. If only some of the Turn Lights work but all of the Hazard Lights work, replace the Turn-Hazard Switch.
4. If the Turn Lights stay on (do not flash) in both Turn Left and Turn Right, replace the Turn Flasher.
5. If only one light does not light, check the bulb, socket, and related wiring (see schematic).

Stop Lights

1. Check the STOP-HAZ Fuse by operating the Hazard Lights.
2. If no Stop Lights work, check the Brake Switch and ORN (140) wire for continuity (see schematic).
3. If the Stop Lights do not turn off, adjust/replace the Brake Switch as necessary.
4. If only one light does not light, check the bulb, socket, and related wiring (see schematic).

Hazard Lights

1. Check the STOP-HAZ Fuse by operating the Stop Lights.
2. If only some of the Hazard Lights work but all of the Turn Lights work, replace the Turn-Hazard Switch.
3. If the Hazard Lights do not turn off, replace the Turn-Hazard Switch.
4. If the Hazard Lights stay on (do not flash), replace the Hazard Flasher.

COMPONENT LOCATION

		Page-Figure
Brake Switch	Above brake pedal, on brake pedal support	201- 9-A
Convenience Center	Behind I/P, to right of steering column	201-10-A
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Turn Flasher	Behind I/P, to right of steering column	201- 9-A
Turn/Hazard Switch	Top of steering column	
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C208 (8 cavities)	Behind LH side of rear seat	201-17-C
C210 (11 cavities)	Behind I/P, on RH lower side of steering column	201- 9-A
C312 (2 cavities)	Behind rear license plate	201-17-A
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A
G104	On radiator support, behind RH headlights	201-16-A
G200	Behind I/P, left of steering column	201-10-A
G303	Center of end panel	201-17-B
S105	Front lights harness, behind LH headlights	201-16-A
S106	Front lights harness, LH front corner of engine compartment	201-15-B
S107	Front lights harness, behind LH headlights	201-16-A
S109	Front lights harness, left of RH headlights	201-16-A
S110	Front lights harness, behind RH headlights	201-16-A
S205	I/P harness, behind instrument cluster	201-10-A
S225	I/P harness, behind instrument cluster	201-10-A
S226	I/P harness, at head of console	201-10-A
S227	I/P harness, behind instrument cluster	201-10-A
S302	Rear lights harness, LH side of end panel	201-17-B
S307	Rear lights harness, LH rear corner of cargo compartment	201-17-B
S308	Rear lights harness, behind LH rear lights	201-17-A
S311	Rear lights harness, left of RH back up lights	201-17-A

(Continued on next page)

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Park/Marker/Tail/License Lights

1. If the Park, Marker and Tail Lights do not work, check the Tail Fuse, Light Switch, and BRN (9) wires for continuity (see schematic).
2. If the Front Marker and the Park Lights do not work, check the connection at C100 and related wiring (see schematic).
3. If the Park Lights do not turn off, replace the Light Switch.

- **Go to System Diagnosis for diagnostic tests.**

SYSTEM DIAGNOSIS

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

SYMPTOM TABLE

SYMPTOM	DO TEST
Turn Lights do not work, but Hazard Lights work	A: Turn Lights Test
Hazard Lights do not work, but Stop Lights work	B: Hazard Lights Test
Stop Lights do not work, but Turn Signals work	C: Stop Lights Test
Stop-Turn Lights on one or both sides do not work	C: Stop Lights Test

A: TURN LIGHTS TEST

Connect: TEST LAMP
At: CONNECTOR C210 (Connected)
Condition:
- **Ignition Switch: RUN**

Connect Between	Correct Result	For Diagnosis
L (PPL) & Ground	Test Lamp lights	See 1

- If test lamp lights, replace the Turn-Hazard Switch.

1. Check Turn Flasher and PPL (16) wire for an open.

B: HAZARD LIGHTS TEST (TABLE 1)

Connect: FUSED JUMPER
At: CONVENIENCE CENTER
Conditions:
- **Hazard Flasher: REMOVED**
- **Hazard Switch: HAZARD**

Jumper Between	Correct Result	For Diagnosis
A (ORN) & B (BRN)	All Turn Lights turn on	See 1

- If the result is correct, replace the Hazard Flasher.

1. Go to Table 2.

B: HAZARD LIGHTS TEST (TABLE 2)

Measure: VOLTAGE
At: CONNECTOR C210 (Disconnected)
Condition:
- **Hazard Flasher: CONNECTED**

Measure Between	Correct Voltage	For Diagnosis
K (BRN) & Ground	Battery	See 1

- If the voltage is correct, replace the Turn-Hazard Switch.

1. Check ORN (140) and BRN (27) wires for an open.

C: STOP LIGHTS TEST

Connect: TEST LAMP
At: C208 (Female Half) (Disconnected)
Condition:
- **Brake Pedal: DEPRESSED and HELD**

Connect Between	Correct Result	For Diagnosis
B (LT BLU) & Ground	Test Lamp lights	See 1
C (LT BLU/ BLK) & Ground	Test Lamp lights	See 2

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- If the results are correct for the Trans AM, check WHT (17) wire to the Turn-Hazard Switch. Replace the Turn-Hazard Switch if the wiring is OK and the Rear Turn Lights light; for the Firebird, check the bulb, socket, and related wiring (see schematic).

1. Check the Brake Switch, LT BLU (20) and ORN (140) wires for continuity. Repair/replace as necessary.
2. Check the Brake Switch, ORN (140) and LT BLU (820) wires for continuity. Repair/replace as necessary.

CIRCUIT OPERATION

Turn Lights

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

With the Turn Switch in TURN LEFT position, voltage is applied from the Turn Switch through the LT BLU wires to the LH Turn Indicator and the LH Front Park/Turn Light. Voltage is applied through the YEL wires to the LH Rear Turn Lights. The lights 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.

When voltage is applied to the LH Front Park/Turn Light, voltage will also be applied to the LH Front Marker Light. If the Light Switch is OFF, current will flow to ground through S105 and the many lights connected in parallel to ground. These lights provide low resistance paths to ground. The Marker Light will flash with the Turn Lights. The lights used for the ground path will not flash, however, since the voltage drop across the Marker Light is much higher than that across the other lights.

When the Light Switch is in either PARK or HEAD, voltage is applied through the Tail Fuse, Light Switch, and S105 to the Marker and Park Lights. If the Turn-Hazard Switch is in TURN LEFT, the LH Front Marker Light has battery voltage at both terminals and goes out. When the flasher stops supplying voltage to the Turn Light, the Marker Light is grounded through the Turn Light and goes on. In this way, the LH Front Marker flashes on when the LH Front Park/Turn Light goes off, and off when the Turn Light goes on.

With the Turn-Hazard Switch in TURN RIGHT, the circuit operation is similar.

Hazard Lights

Voltage is applied at all times through the STOP-HAZ Fuse and the Hazard Flasher to the normally open poles of the Hazard Switch in the Turn-Hazard Switch. With the Hazard Switch in HAZARD, current flows through the assembly using all four paths used by both Front and Rear Turn Lights. All of the Turn Lights and both Turn Indicators flash on and off.

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

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

Stop Lights

Voltage is applied at all times through the STOP HAZ Fuse to the Brake Switch. When the brake pedal is depressed, the contacts in the Brake Switch close.

The Trans Am Stop Lights receive voltage through the WHT wires that feed the Turn-Hazard Switch. With the switches in the positions shown in the schematic, the Stop Lights are connected to the WHT wire through the YEL and DK GRN wires and the turn switches. They will come on when the Brake Switch is closed. The Firebird Stop Lights are connected directly to the Brake Switch.

For the High Level Stop Light, voltage is applied directly from the Brake Switch to the High Level Stop Light.

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Front Park Lights

The Front Park Lights can be lit by putting the Light Switch either in PARK or in HEAD.

With the Park Lights or Headlights on, battery voltage is provided through the BRN wires to both Park Lights. The path to ground for the Park Lights is G103 (LH) or G104 (RH).

The Park Lights will not flash when the turn signal is on, they will have a steady glow.

Front Marker Lights

The Front Marker Lights can be lit by the Park Lights or the Turn Lights. Neither of the two wires to each of the marker bulbs is a ground wire.

With the Park Lights on, battery voltage is supplied through the BRN wires to both Marker Lights. The path to ground for the marker bulbs is through the Turn Lights. The small Marker Light bulbs light up, but not the larger turn bulbs.

When the Turn Lights are on, but not the Park Lights, battery voltage is applied through the BLU wires to the Marker Lights. They glow since they are grounded through the entire Park Light system. As before, the small marker bulbs light up, but not all the parking bulbs.

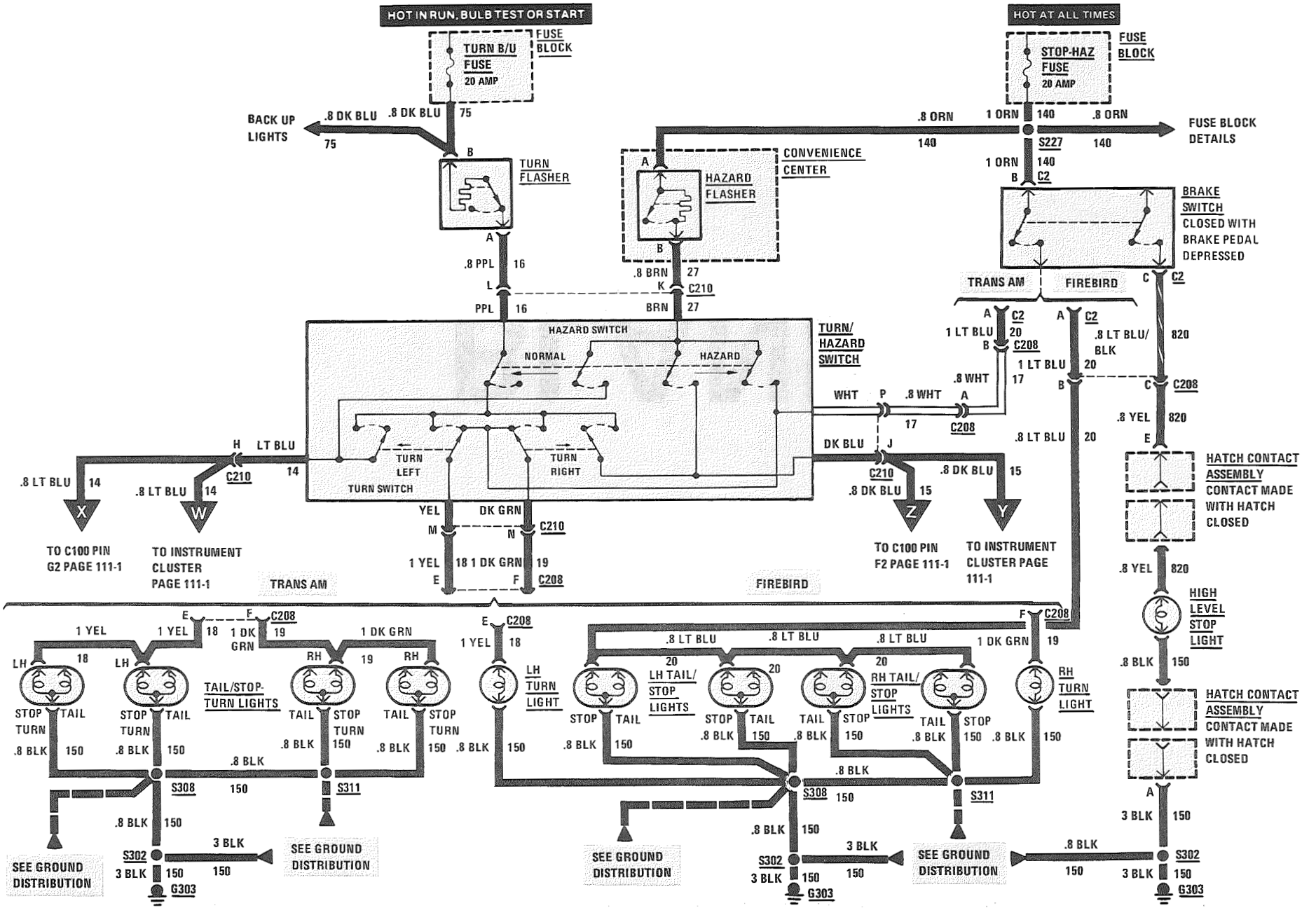
If both the Park Lights and a set of Turn lights are on at the same time, the marker bulb for that side will not light up. With battery voltage on both sides of a bulb, it will not glow. When the Turn Lights flash off, however, the marker bulb on that side will come on since it is now grounded through the Turn Lights. This circuit makes the turn and marker bulbs flash out of step with each other when the Park Lights are on.

License, Tail, or Rear Marker Lights

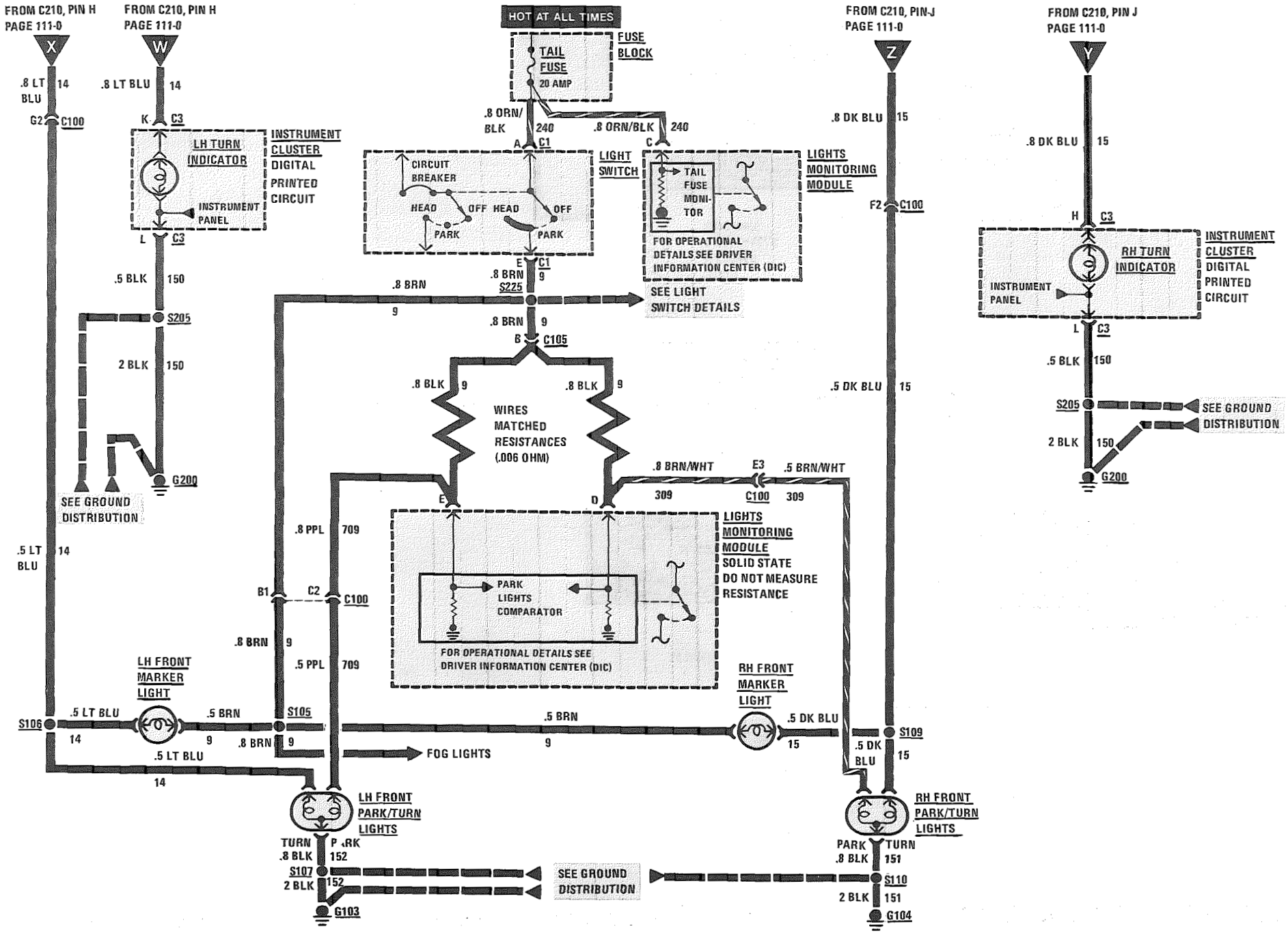
Voltage is applied through the Tail Fuse to the Light Switch at all times. With the Light Switch in PARK or HEAD, voltage is applied through the fuse and the Light Switch to all of the lights in this circuit.

BLANK

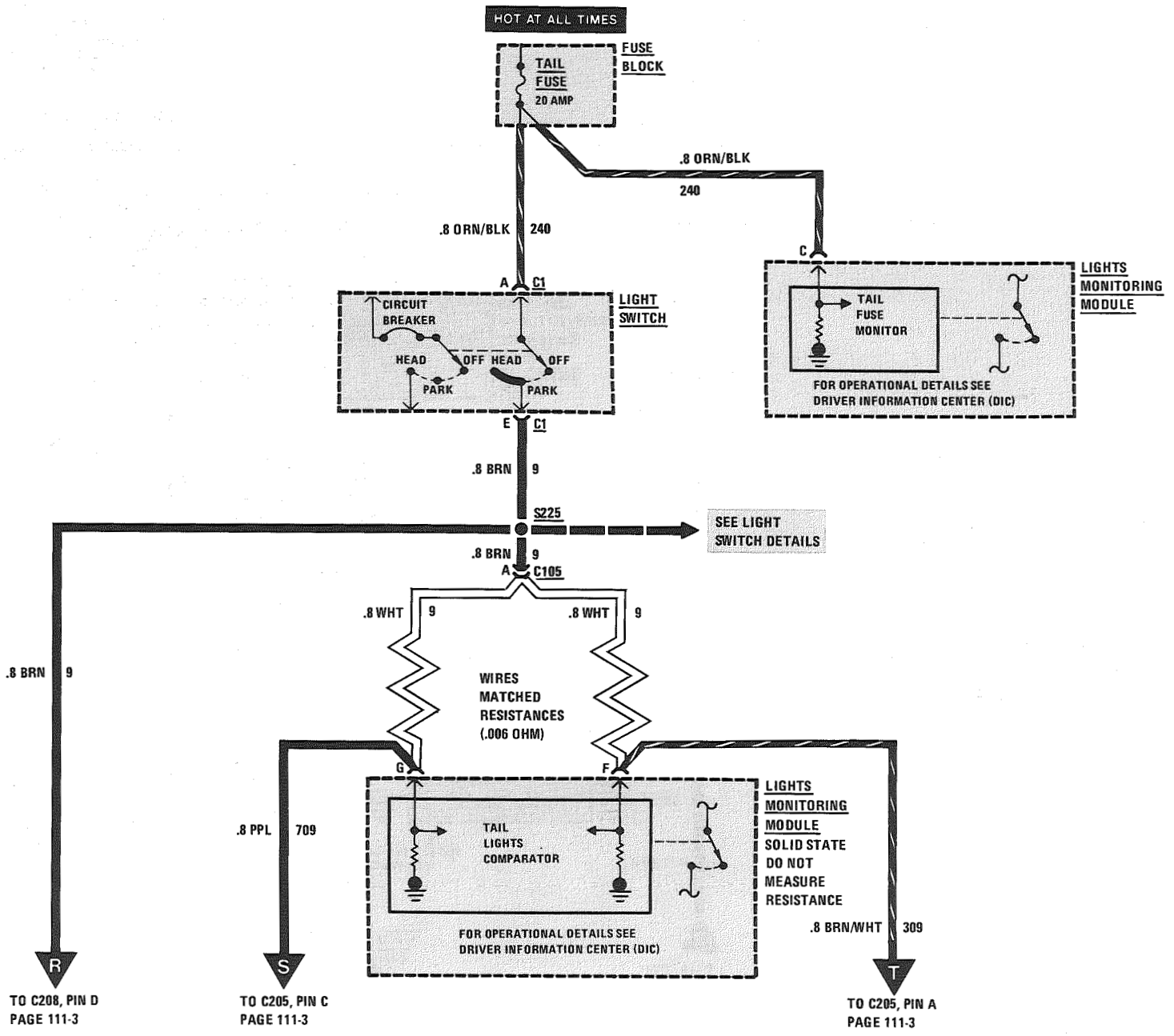
EXTERIOR LIGHTS WITH LAMP MONITOR: TURN/HAZARD/STOP/FRONT PARK/FRONT MARKER/ HIGH LEVEL STOP LIGHT



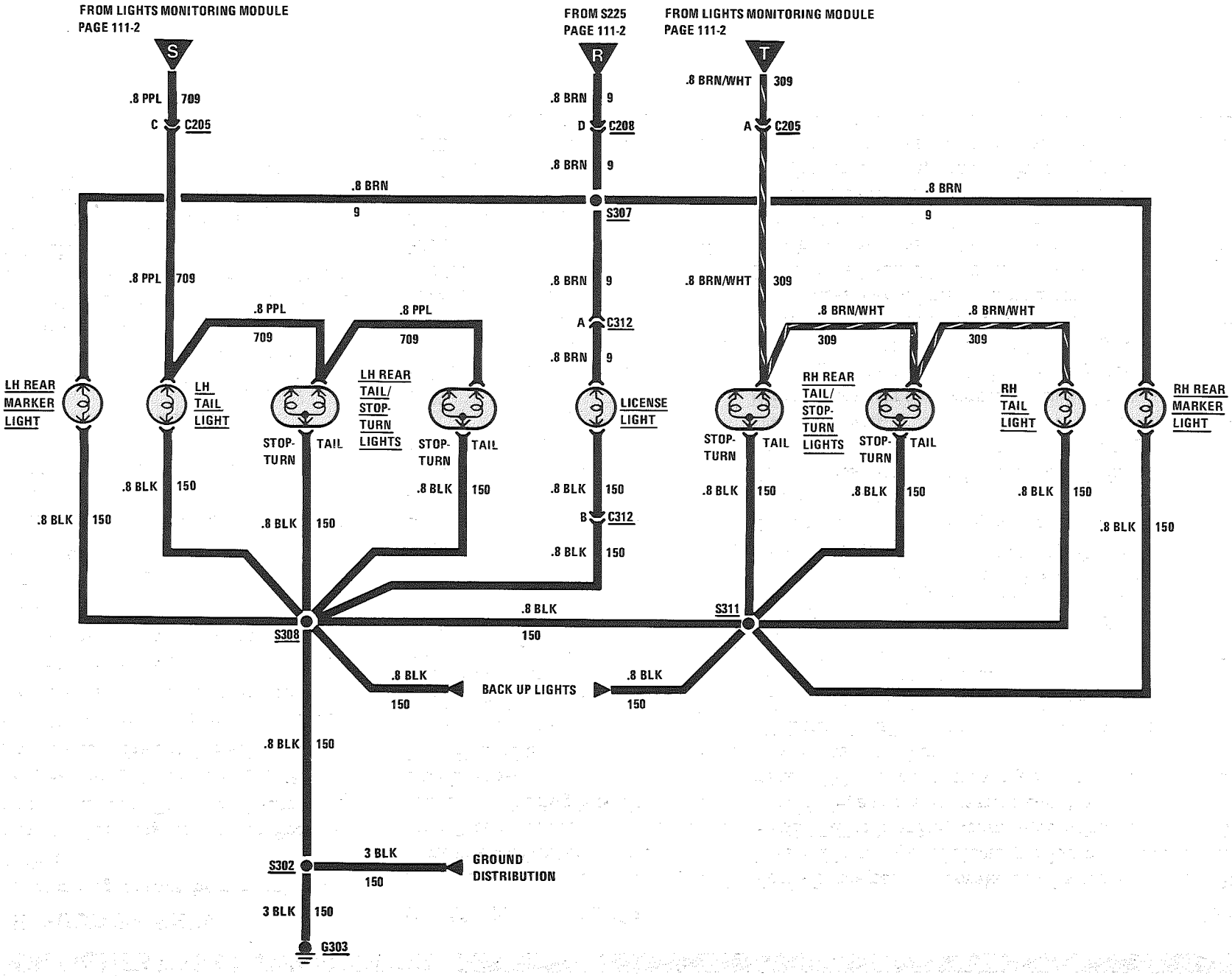
EXTERIOR LIGHTS WITH LAMP MONITOR: TURN/HAZARD/FRONT PARK/FRONT MARKER



EXTERIOR LIGHTS WITH LAMP MONITOR: TAIL/REAR MARKER/LICENSE



EXTERIOR LIGHTS WITH LAMP MONITOR: TAIL/REAR MARKER/LICENSE



EXTERIOR LIGHTS WITH LAMP MONITOR

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

1. If neither the Turn Lights nor the Back Up Lights work, check the TURN B/U Fuse.
2. If neither the Stop Lights nor the Hazard Lights work, check the STOP-HAZ Fuse.
3. If only one light does not operate, check bulb, socket, and related wiring (see schematic).
4. If one of the Turn Indicators goes on when the Park Lights are turned on, check the Front Turn Light on that side.
5. For any of the following symptoms, replace the Turn-Hazard Switch:

- Some Turn Lights work and all Hazard Lights work.
- Some Hazard Lights work and all Turn Lights work.
- Hazard Lights do not turn off.

6. If the Turn Lights stay on (do not flash) in both TURN LEFT and TURN RIGHT, replace the Turn Flasher.
7. If the Hazard Lights stay on (do not flash) in HAZARD, but the Stop Lights go off normally, replace the Hazard Flasher.
8. If no Park, Tail, or License Lights work, check the Light Switch, and the ORN/BLK (240) and BRN (9) wires for an open (see schematic).

COMPONENT LOCATION

		Page-Figure
Brake Switch	Above brake pedal, on brake pedal support	201- 9-A
Convenience Center	Behind I/P, to right of steering column	201-10-A
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Lights Monitoring Module	Behind I/P, at base of steering column	
Turn Flasher	Behind I/P, to right of steering column	201- 9-A
Turn/Hazard Switch	Top of steering column	
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C105 (2 cavities)	Behind LH side of I/P, near fuse block	
C205 (3 cavities)	Behind LH side of rear seat	201-17-C
C208 (8 cavities)	Behind LH side of rear seat	201-17-C
C210 (11 cavities)	Behind I/P, on RH lower side of steering column	201- 9-A
C312 (2 cavities)	Behind rear license plate	201-17-A
G103 (Except VIN E)	On radiator support, behind LH headlights	201-16-A
G104	On radiator support, behind RH headlights	201-16-A
G200	Behind I/P, left of steering column	201-10-A
G303	Center of end panel	201-17-B
S105	Front lights harness, behind LH headlights	201-16-A
S106	Front lights harness, LH front corner of engine compartment	201-15-B
S107	Front lights harness, behind LH headlights	201-16-A
S109	Front lights harness, left of RH headlights	201-16-A
S110	Front lights harness, behind RH headlights	201-16-A
S205	I/P harness, behind instrument cluster	201-10-A
S225	I/P harness, behind instrument cluster	201-10-A
S227	I/P harness, behind instrument cluster	201-10-A
S302	Rear lights harness, LH side of end panel	201-17-B
S307	Rear lights harness, LH rear corner of cargo compartment	201-17-B
S308	Rear lights harness, behind LH rear lights	201-17-A
S311	Rear lights harness, left of RH back up lights	201-17-A

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9. If the Stop Lights stay on without the brake pedal pressed, adjust/replace the Brake Switch.
10. If the Park Lights do not turn off, replace the Light Switch.
11. If only the High Level Stop Light does not work, check the Brake Switch, High Level Stop Light, the LT BLU/BLK and YEL (820) wires, and the BLK (150) wires for an open.
12. If a Turn Indicator lights steadily (does not flash) when the Turn Signal is on, check the Turn Lights on that side.

- **Go to System Diagnosis for diagnostic tests.**

SYSTEM DIAGNOSIS

- **Diagnostic steps for the symptoms listed in the following table are listed after the table.**

SYMPTOM TABLE

A: The Turn Lights do not work, but the Hazard Lights work
B: The Hazard Lights do not work, but the Stop Lights and Turn Lights work
C: The Stop Lights do not work, but the Turn Signals work
D: The Rear Turn Lights on one or both sides do not work
E: The Front Turn Light and Turn Indicator on one or both sides do not light

A: THE TURN LIGHTS DO NOT WORK, BUT THE HAZARD LIGHTS WORK

Connect: TEST LAMP
At: CONNECTOR C210 (Connected)
Condition:
- **Ignition Switch: RUN**

Connect Between	Correct Result	For Diagnosis of Incorrect Results
L (PPL) & Ground	Test Lamp lights	See 1

- If the test lamp lights, replace the Turn-Hazard Switch.

1. Check the Turn Flasher, Turn B/U Fuse, and the DK BLU (75) and PPL (16) wires for an open (see schematic).

B: THE HAZARD LIGHTS DO NOT WORK, BUT THE STOP LIGHTS AND TURN LIGHTS WORK (TABLE 1)

Connect: FUSED JUMPER
At: CONVENIENCE CENTER (Disconnected)
Conditions:
- **Hazard Flasher: REMOVED**
- **Hazard Switch: HAZARD**

Jumper Between	Correct Result	For Diagnosis of Incorrect Results
B (BRN) & A (ORN)	All the Turn Lights light	See 1

- If the result is correct, replace the Hazard Flasher.

1. Go to Table 2.

B: THE HAZARD LIGHTS DO NOT WORK, BUT THE STOP LIGHTS AND TURN LIGHTS WORK (TABLE 2)

Connect: TEST LAMP
At: CONNECTOR C210 (Connected)

Connect Between	Correct Result	For Diagnosis of Incorrect Results
K (BRN) & Ground	Test Lamp lights	See 1

- If the result is correct, replace the Turn-Hazard Switch.

1. Check the ORN (140) and BRN (27) wires for an open (see schematic).

C: THE STOP LIGHTS DO NOT WORK BUT THE TURN SIGNALS WORK

Connect: TEST LAMP
At: CONNECTOR C208 (Connected)
Condition:
- **Brake Pedal: DEPRESSED**

Connect Between	Correct Result	For Diagnosis of Incorrect Results
B (LT BLU) & Ground	Test Lamp lights	See 1

- If the test lamp lights, with Trans Am, check WHT (17) wire for an open, then replace Turn/Hazard Switch if WHT wire is good. With Firebird, check LT BLU (20) wire for an open (See schematic).

1. Check/adjust the Brake Switch, and check the WHT (17) and ORN (140) wires for an open (see schematic).

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D: THE REAR TURN LIGHTS ON ONE OR BOTH SIDES DO NOT WORK

Connect: TEST LAMP
At: CONNECTOR C210 (Connected)
Condition:
- **Brake Pedal: DEPRESSED**

Connect Between	Correct Result	For Diagnosis of Incorrect Results
M (YEL) & Ground	Test Lamp lights	See 1
N (DK GRN) & Ground	Test Lamp lights	See 1

- If both results are correct, check the YEL (18) or DK GRN (19) wire for an open.

1. Replace the Turn-Hazard Switch.

E: THE FRONT TURN LIGHT AND TURN INDICATOR ON ONE OR BOTH SIDES DO NOT LIGHT

Connect: TEST LAMP
At: CONNECTOR C210 (Connected)
Conditions:
- **Hazard Switch: HAZARD**
- **Brake Pedal: DEPRESSED**

Connect Between	Correct Result	For Diagnosis of Incorrect Results
H (LT BLU) & Ground	Test Lamp lights	See 1
J (DK BLU) & Ground	Test Lamp lights	See 1

- If both results are correct,check the LT BLU (14) or DK BLU (15) wire for an open (see schematic).

1. Replace the Turn-Hazard Switch.

CIRCUIT OPERATION

Turn Lights

With the Ignition Switch in RUN, BULB TEST, or START, voltage is applied through the TURN B/U Fuse and the Turn Flasher to the Turn/Hazard Switch. With the switch in TURN LEFT, voltage is applied to the LH Turn Lights and Turn Indicator. The current through the bulbs heats the Turn Flasher. It opens and closes to flash the left turn lights.

The right turn lights operate in a similar way when the turn light switches are closed to the right.

Stop Lights

Voltage is applied directly from the Brake Switch to the High Level Stop Light when the Brake pedal is depressed.

The lower Stop Lights receive voltage through the WHT wire that feeds the Turn/Hazard Switch. With the switches in the positions shown in the schematic, the WHT wire is connected through the Turn Switch and the YEL and DK GRN wires to the Stop Lights. They come on when the Brake Switch is closed.

Front Marker Lights

The Front Marker Lights can be lit by either the Park Lights or the Turn Lights. Neither of the two wires to each of the marker bulbs is a ground wire.

With the Park Lights on, battery voltage is supplied through the BRN wires to both Marker Lights. The path to the ground for the marker bulbs is through the Turn Lights. The small Marker Light bulbs light up, but not the larger turn bulbs.

When the Turn Lights are on, but not the Park Lights, battery voltage is applied through the BLU wires to the Marker Lights. They glow since they are grounded through the entire Park Light system. As before, the small marker bulbs light up, but not all the parking bulbs.

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If both the Park Lights and a set of Turn Lights are on at the same time, the marker bulb for that side will not light up. With battery voltage on both sides of a bulb, it will not glow. When the Turn Lights flash off, however, the marker bulb on that side will come on since it is now grounded through the Turn Lights. This circuit makes the turn and marker bulbs flash out of step with each other when the Park Lights are on.

Park, Tail, Marker, and License Lights

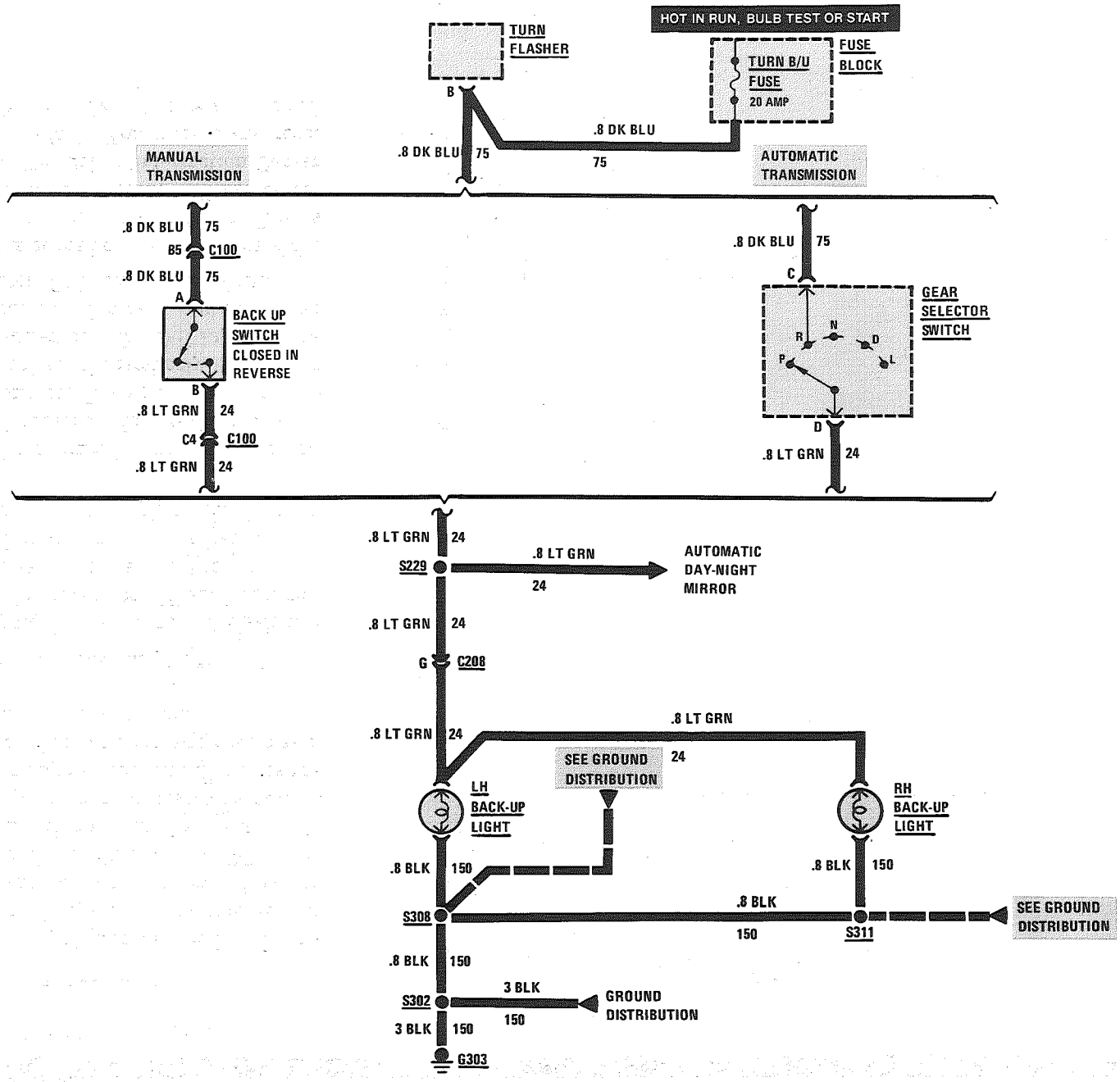
Voltage is applied at all times through the Tail Fuse to the Light Switch. When the switch is closed, voltage is applied to the Exterior Lights. All the Front Park and Marker Lights, Rear Marker Lights, Tail Lights, and License Lights light.

If one of the Front Park Lights is burned out, the Park Light Comparator detects the open park light filament, and the Driver Information Center (DIC) displays the fault. Similarly, if one of the Tail Lights is burned out, the Tail Lights Comparator detects the open filament, and the Driver Information Center (DIC) displays the fault.

If a Tail Light is burned out on both sides of the vehicle for the same comparator in the Lights Monitoring Module, the module will not detect the malfunction. The Driver Information Center will not display the fault. The module will react the same if both Front Park Lights are burned out.

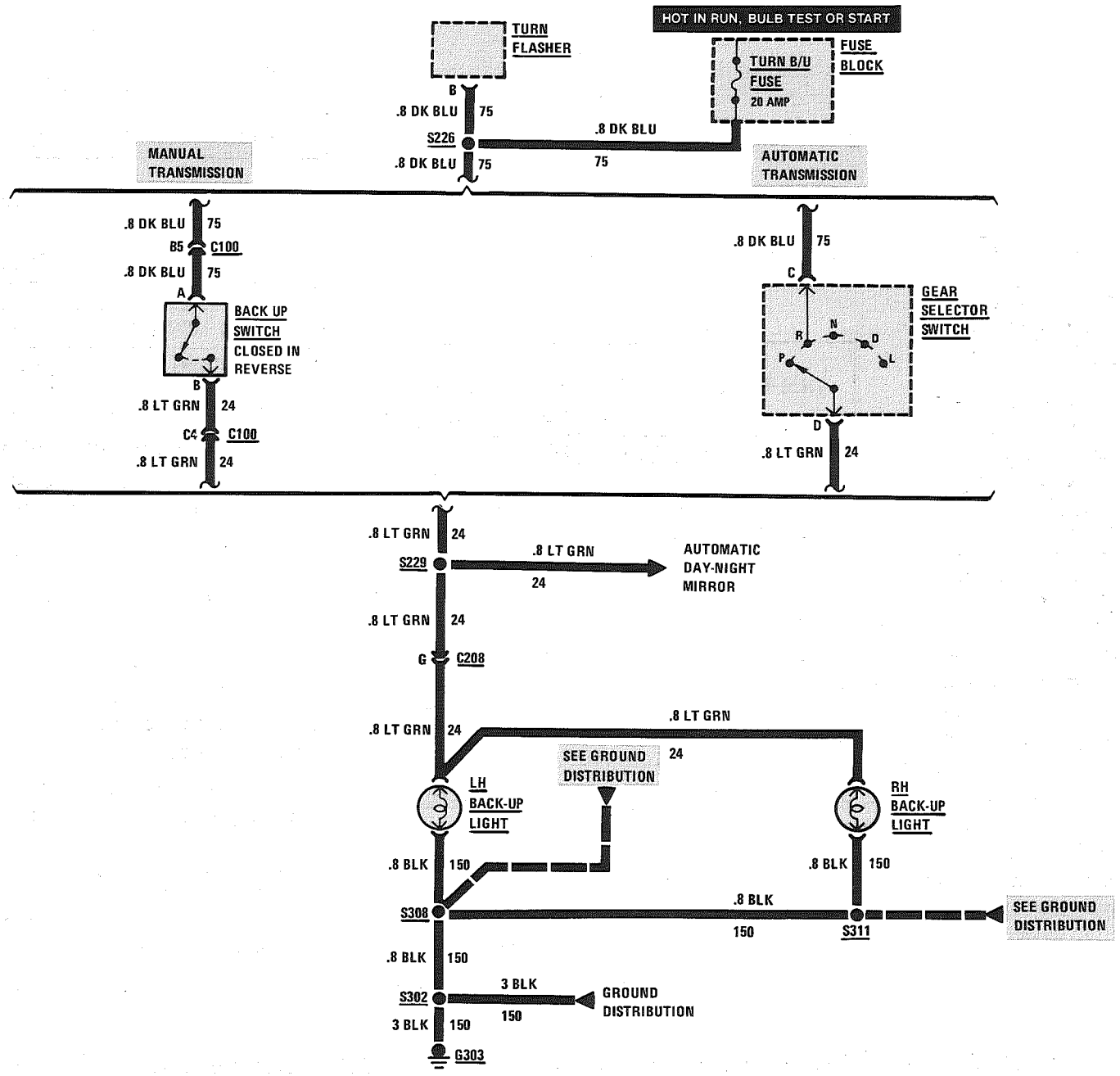
BACK UP LIGHTS

WITH DIGITAL CLUSTER



BACK UP LIGHTS

WITHOUT DIGITAL CLUSTER



BACK UP LIGHTS

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the TURN B/U Fuse by operating the Turn Flasher.
2. If only one Back Up Light does not operate, check bulb, socket, and related wiring.
3. If the Back Up Lights go on or off in the wrong gear, adjust the Gear Selector (Automatic) or Back Up (Manual) Switch.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

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

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
Turn the Ignition Switch to RUN, and move the Gear Shift to any gear except REVERSE	Back Up Lights are off
Move the Gear Shift to REVERSE	Back Up Lights come on
Move the Gear Shift to any gear except REVERSE	Back Up Lights go off

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

COMPONENT LOCATION

		Page-Figure
Back Up Switch	On LH side of transmission	201- 8-F
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Gear Selector Switch	In console, at base of gear selector	201-11-E
Turn Flasher	Behind I/P, to right of steering column	201- 9-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C208 (8 cavities)	Behind LH side of rear seat	201-17-C
G303	Center of end panel	201-17-B
S229	I/P harness, behind LH side of I/P	201-10-A
S302	Rear lights harness, LH side of end panel	201-17-B
S308	Rear lights harness, behind LH rear lights	201-17-A
S311	Rear lights harness, left of RH back up lights	201-17-A

SYSTEM DIAGNOSIS

- **Diagnostic steps for the symptoms listed in the following table are listed after the table.**

SYMPTOM TABLE

A: Back Up Lights do not operate
B: Back Up Lights light in PARK or NEUTRAL

A: BACK UP LIGHTS DO NOT OPERATE

Measure: VOLTAGE
At: GEAR SELECTOR SWITCH (Automatic) or BACK UP SWITCH (Manual) (Disconnected)
Conditions:
- **Ignition Switch: RUN**
- **Gear Shift: REVERSE**

Measure Between	Correct Voltage	For Diagnosis
DK BLU & Ground	Battery	See 1

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DK BLU & LT GRN	Battery	See 2

- If the above voltages are correct, adjust/replace the switch as necessary.

1. Check DK BLU (75) wire and the TURN B/U Fuse.
2. Check LT GRN (24) wire and sockets for an open.

B: BACK UP LIGHTS LIGHT IN PARK OR NEUTRAL

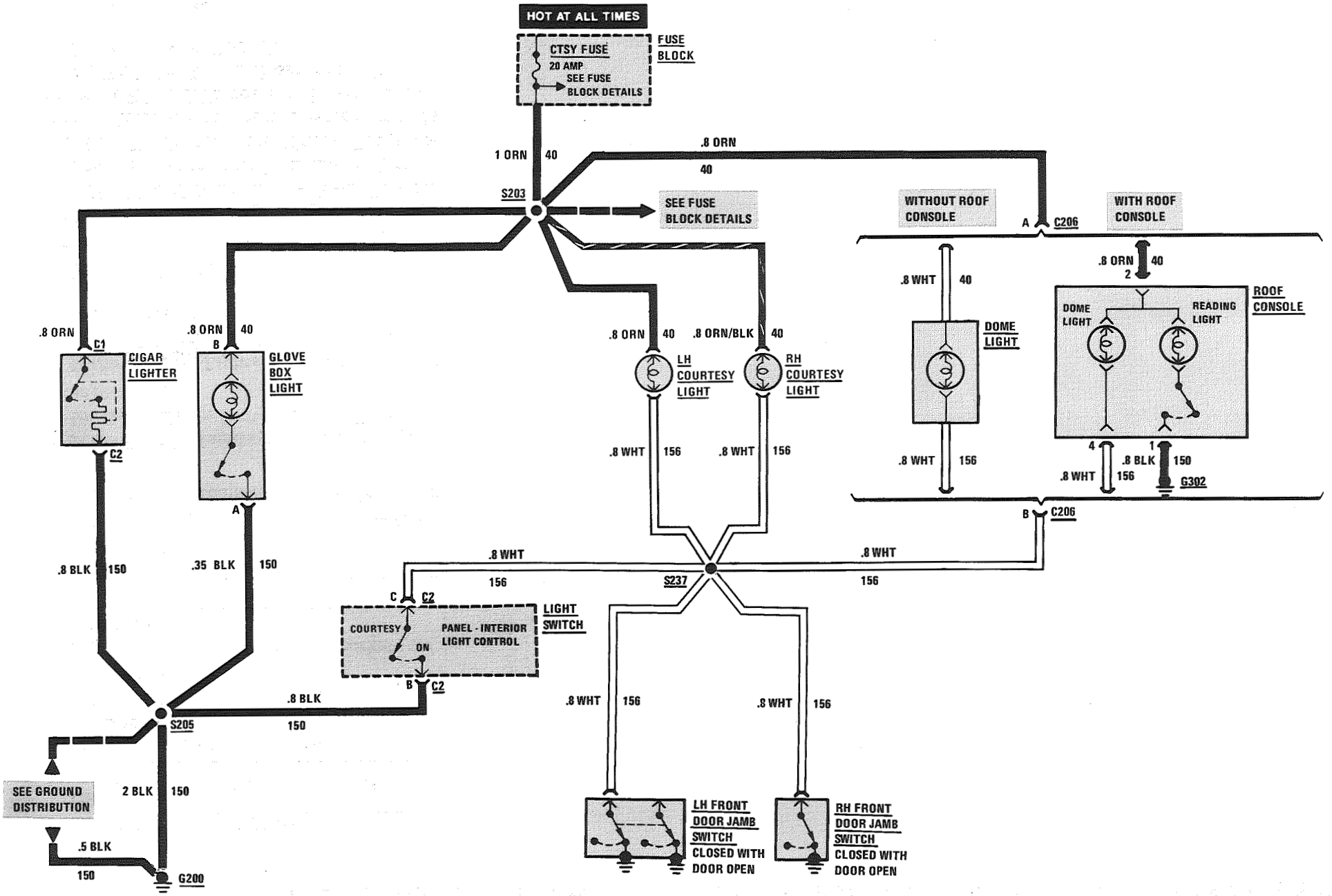
Remove the connector from the Gear Selector Switch (Automatic) or Back Up Switch (Manual).

- If the Back Up Lights go out, adjust/replace the Gear Selector Switch or Back Up Switch as necessary.
- If the Back Up Lights do not go out, check LT GRN (24) wires and sockets for a short to battery voltage.

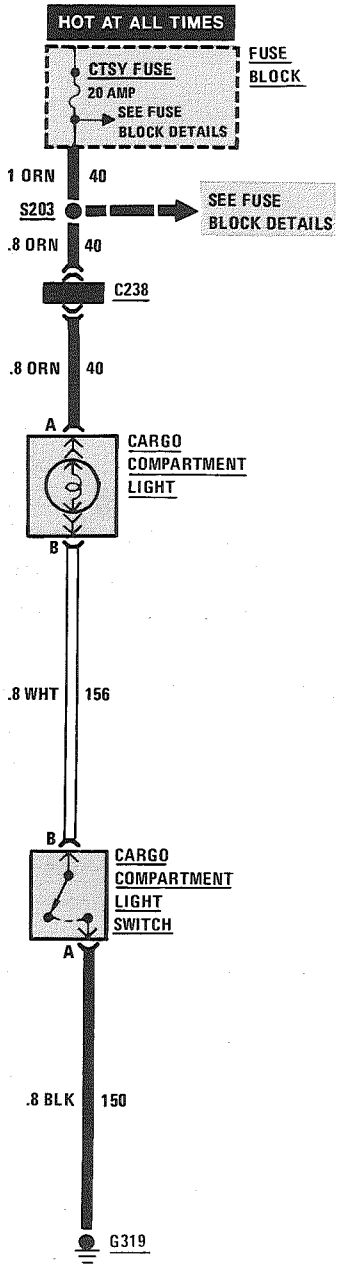
CIRCUIT OPERATION

With the Ignition Switch in RUN, BULB TEST or START, voltage is applied through the TURN B/U Fuse to the Gear Selector Switch (with Automatic Transmission), or to the Back Up Switch (with Manual Transmission). Whenever the gear selector lever is shifted to REVERSE, the Gear Selector Switch or the Back Up Switch closes, and voltage is applied to the Back Up Lights.

INTERIOR LIGHTS: DOME/READING/COURTESY/GLOVE BOX AND CIGAR LIGHTER



INTERIOR LIGHTS: CARGO COMPARTMENT LIGHT



TROUBLESHOOTING HINTS

- **Try the following checks.**
- **Check CTSY Fuse if none of the Interior Lights operate.**

Dome/Reading/Courtesy Lights

1. If the Panel/Interior Light Control does not operate the Interior lights but the lights turn on with any door open, check the Light Switch, WHT (156) and BLK (150) wires for continuity (see schematic).
2. If the Interior Lights do not come on with only one door open, check the WHT (156) wire and suspect Door Jamb Switch for continuity. Repair/replace as necessary.
3. If the Dome Light comes on but the Reading Light(s) do not, repair/replace the Reading Light(s) as necessary.
4. If the Dome and Reading Lights do not light but the RH and LH Courtesy Lights do, check connection at C206 and related wiring (see schematic).
5. If the Dome Lights do not light when the Panel Interior Light Control is turned to ON but do light with any door open, check connection at C206 and related wiring for continuity (see schematic).
6. If the RH and LH Courtesy Lights do not light with any door open but do light when the Panel Interior Light Control is turned ON, check related wiring for continuity (see schematic).
7. If only one light does not operate, check bulb, socket and related wiring (see schematic).
8. If the Courtesy Lights do not turn off, check the Panel Interior Light Control, Door Jamb Switches and WHT (156) wires for a short to ground.

Glove Box Light Console/Cigar Lighter

1. If the Glove Box Light does not light but the Cigar Lighter works, check the connector, ORN (40) wire, BLK (150) wires, and switch for continuity.
2. If only the Cigar Lighter does not operate, check the element for corrosion or damage. Also check the ORN (40) and BLK (150) wires to their connector and connector for continuity. Replace the Cigar Lighter Assembly if the element, the wires, and connector are good.

Cargo Compartment Light

If only the Cargo Compartment Light does not operate, check the Cargo Compartment Light Switch, connector C238, ORN (40) wire, WHT (156) wire and BLK (150) wires for continuity (see schematic). Repair/replace as necessary.

COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
C206 (2 cavities)	Behind I/P, at LH shroud	
C238 (12 cavities)	LH shroud, ahead of center access hole	201-11-C
G200	Behind I/P, left of steering column	201-10-A
G302	Center of windshield header	201-15-E
G319	In cargo compartment, behind center of end panel	201-17-D
S203	I/P harness, behind instrument cluster	201-10-A
S205	I/P harness, behind instrument cluster	201-10-A
S237	I/P harness, behind LH side of I/P	201-10-A

CIRCUIT OPERATION

Interior Lights and Cigar Lighter

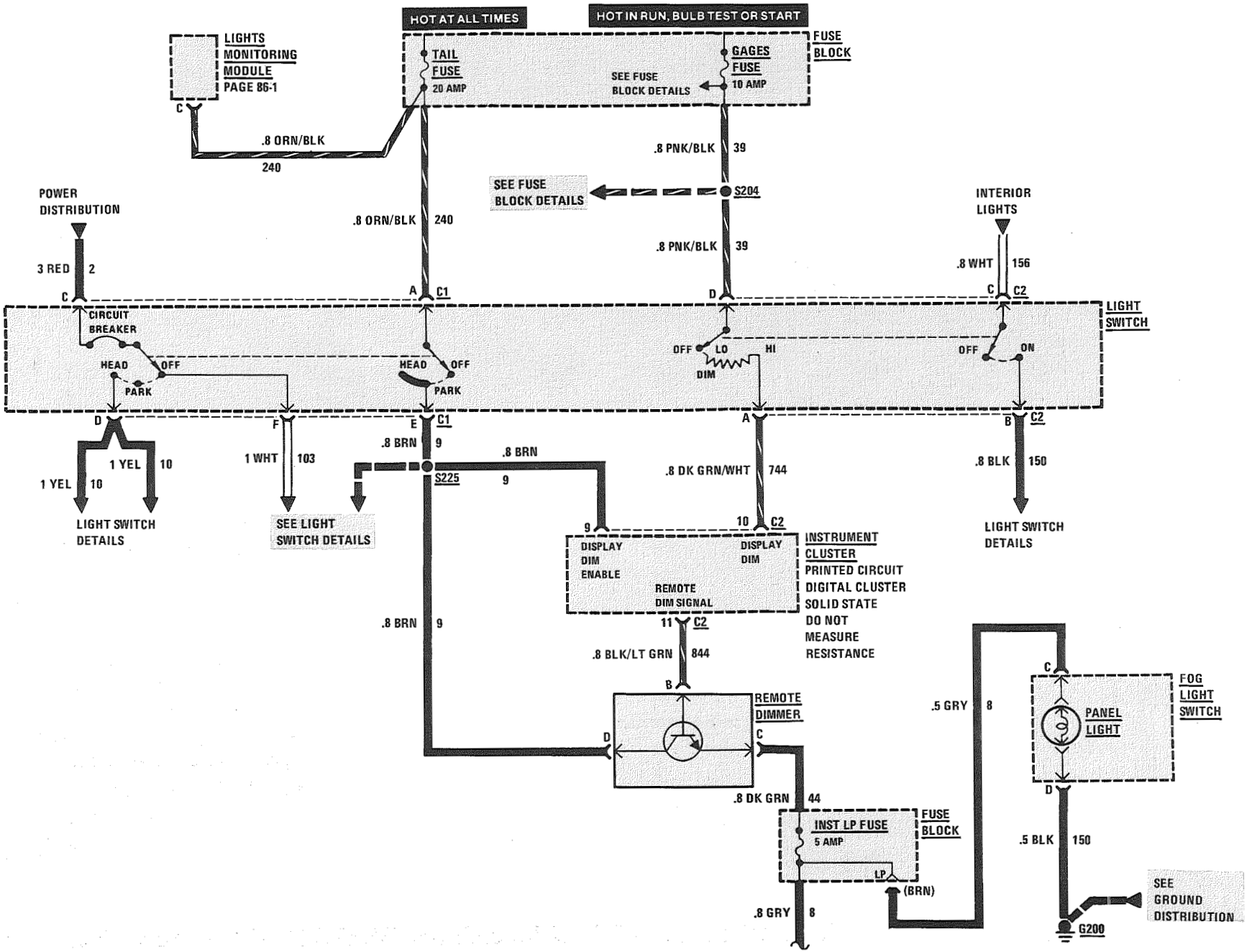
Voltage is applied at all times through the CTSY Fuse to the components in the circuit. The Glove Box Light, Dome Reading Lights, and Cigar Lighter each use separate switches. The LH and RH Courtesy Lights and the Dome Light can be turned on by closing the Panel Interior Light Control, or by opening a door.

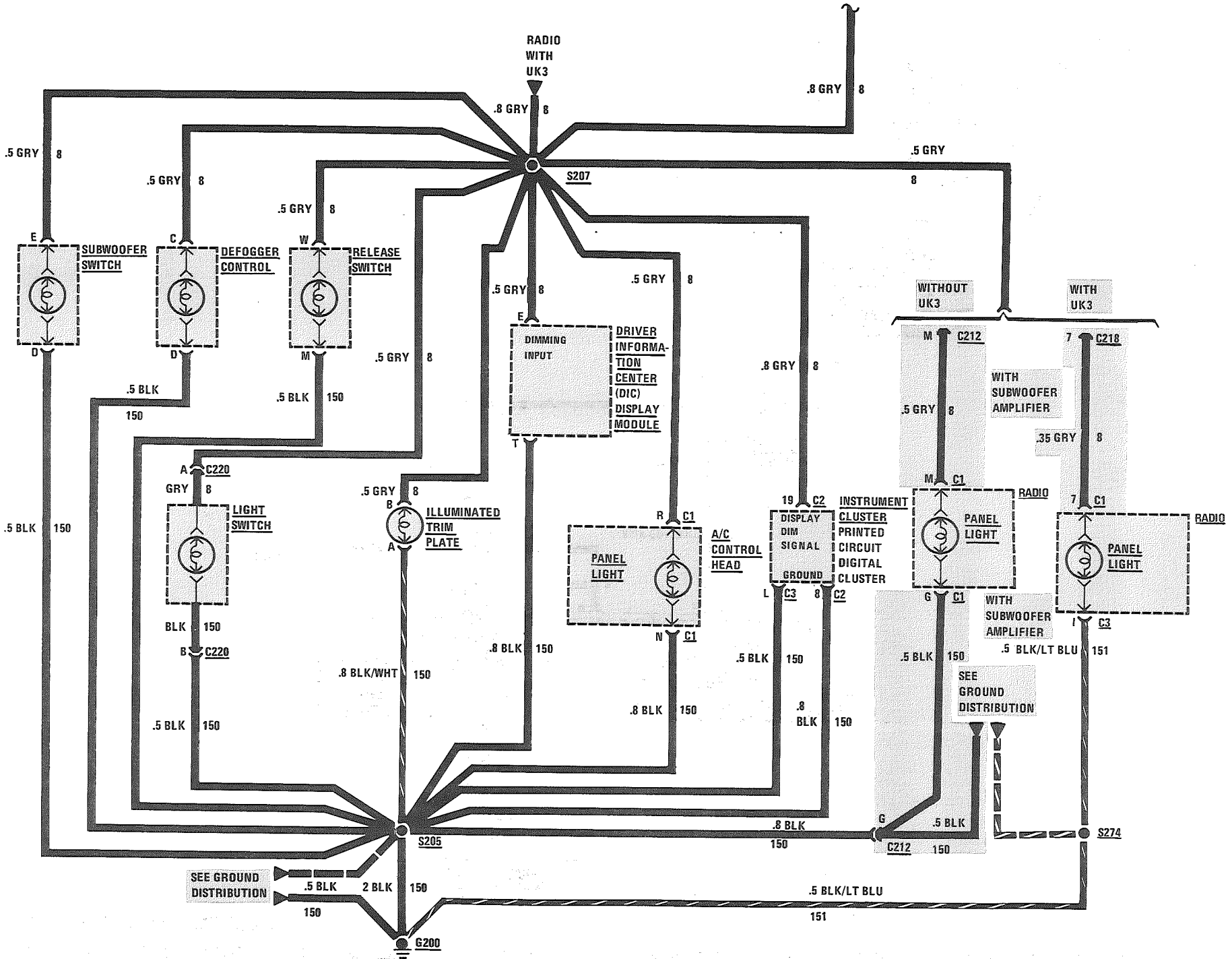
Cargo Compartment Light

Voltage is applied to the CTSY Fuse at all times. With the Cargo Compartment Light Switch closed, voltage is applied to the Cargo Compartment Light.

INTERIOR LIGHTS DIMMING

WITH DIGITAL CLUSTER




RADIO WITH UK3
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S207
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SUBWOOFER SWITCH
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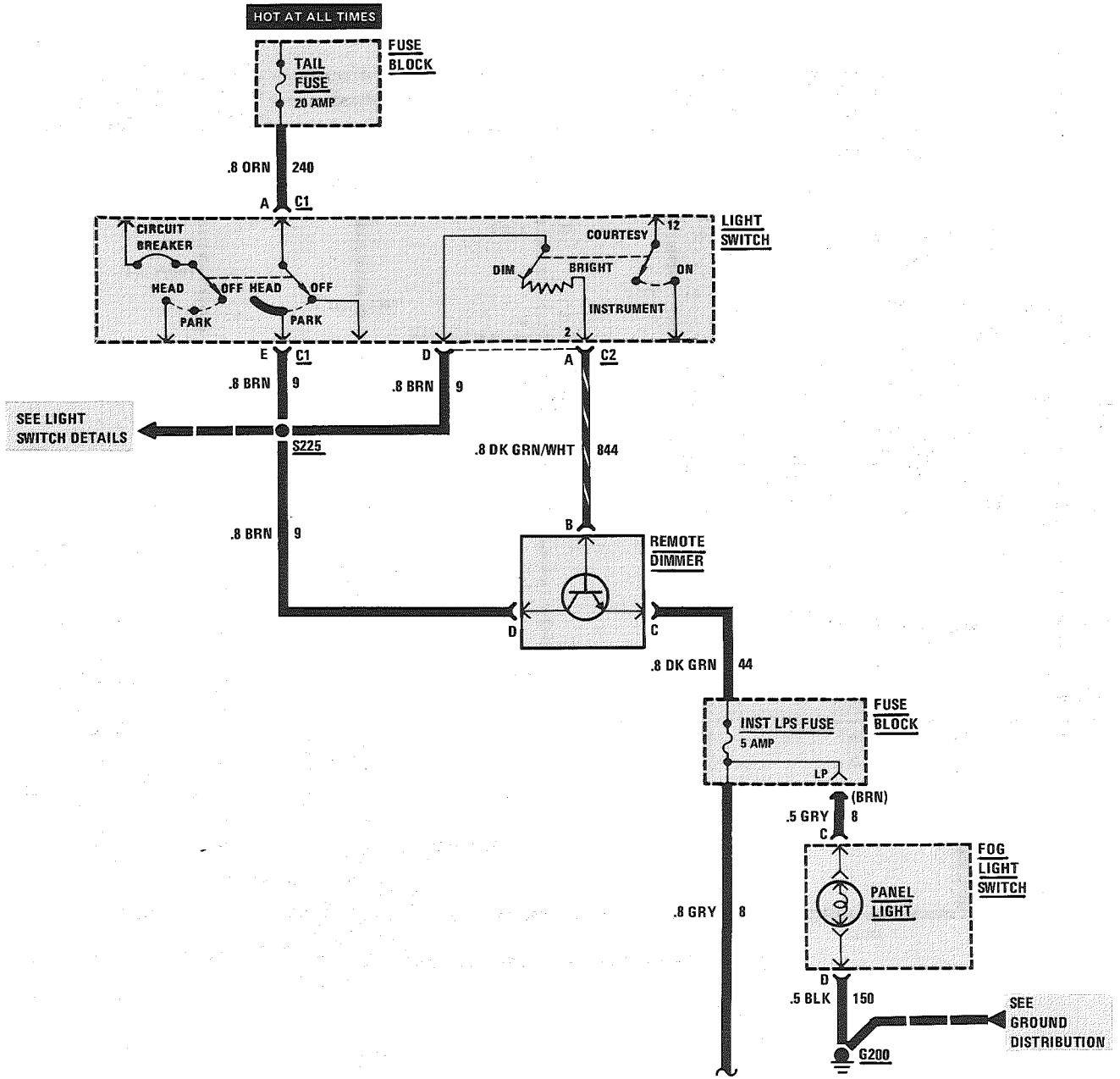
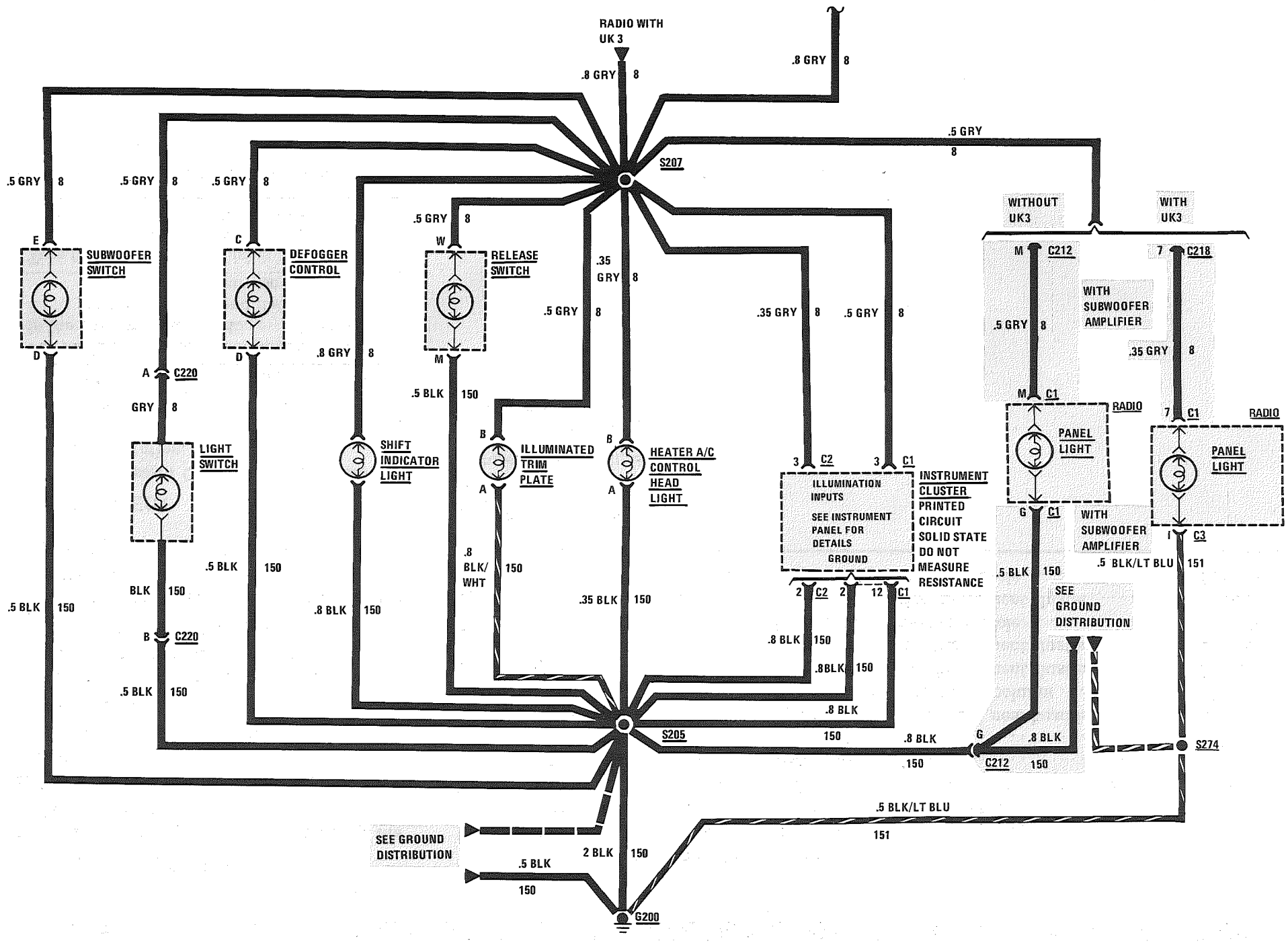
DEFOGGER CONTROL
D
W
RELEASE SWITCH
M
.5 BLK 150
.5 BLK 150
.5 GRY 8
E
DIMMING INPUT
T
DRIVER INFORMATION CENTER (DIC) DISPLAY MODULE
.5 GRY 8
.8 GRY 8
WITHOUT UK3
WITH UK3
M C212
7 C218
WITH SUBWOOFER AMPLIFIER
.5 GRY 8
.35 GRY 8
M C1
7 C1
RADIO
PANEL LIGHT
RADIO
PANEL LIGHT
A C220
GRY 8
LIGHT SWITCH
B
ILLUMINATED TRIM PLATE
A
.5 GRY 8
R C1
PANEL LIGHT
A/C CONTROL HEAD
N C1
19 C2
DISPLAY DIM SIGNAL
GROUND
INSTRUMENT CLUSTER PRINTED CIRCUIT DIGITAL CLUSTER
L C3
8 C2
G C1
WITH SUBWOOFER AMPLIFIER
I C3
.5 BLK 150
BLK 150
B C220
.8 BLK 150
.8 BLK/WHT 150
.5 BLK 150
.8 BLK 150
.5 BLK 150
.8 BLK 150
.5 BLK 150
.5 BLK/LT BLU 151
SEE GROUND DISTRIBUTION
.5 BLK 150
.8 BLK 150
G
.5 BLK
C212 150
S205
S274
SEE GROUND DISTRIBUTION
.5 BLK 150
2 BLK 150
.5 BLK/LT BLU 151
G200

INTERIOR LIGHTS DIMMING

WITHOUT DIGITAL CLUSTER




RADIO WITH UK 3
.8 GRY 8
.8 GRY 8
S207
.5 GRY 8
.5 GRY 8
.5 GRY 8
.5 GRY 8
.5 GRY 8
.5 GRY 8
.35 GRY 8
.35 GRY 8
.5 GRY 8
.5 GRY 8
.8 GRY 8
.5 BLK 150
GRY 8
.5 BLK 150
BLK 150
.5 BLK 150
.8 BLK 150
.8 BLK/WHT 150
.35 BLK 150
.8 BLK 150
.8BLK 150
.8 BLK
150
.8 BLK
150
.5 BLK 150
.5 BLK 150
2 BLK 150
.5 BLK
150
.5 BLK/LT BLU
151
.5 BLK/LT BLU
151
.5 BLK 150
.8 BLK
150
.8 BLK
150
E
SUBWOOFER SWITCH
D
C
DEFOGGER CONTROL
D
W
RELEASE SWITCH
M
A C220
LIGHT SWITCH
B C220
B
ILLUMINATED TRIM PLATE
A
B
HEATER A/C CONTROL HEAD LIGHT
A
SHIFT INDICATOR LIGHT
3 C2
3 C1
ILLUMINATION INPUTS
SEE INSTRUMENT PANEL FOR DETAILS
GROUND
INSTRUMENT CLUSTER PRINTED CIRCUIT SOLID STATE DO NOT MEASURE RESISTANCE
2 C2
2
12 C1
S205
G200
SEE GROUND DISTRIBUTION
SEE GROUND DISTRIBUTION
WITHOUT UK3
WITH UK3
M C212
7 C218
WITH SUBWOOFER AMPLIFIER
M C1
RADIO
PANEL LIGHT
G C1
7 C1
RADIO
PANEL LIGHT
WITH SUBWOOFER AMPLIFIER
I C3
G
C212
S274

INTERIOR LIGHTS DIMMING

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the Light Switch by operating the Park Lights.
2. If none of the Instrument Panel Lights work, check the INST LP Fuse.
3. If a single light does not work, check the bulb and the associated wires to the bulb.
4. Check that G200 is clean and tight.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
Put the Light Switch in the Park or Head Lamp position	Instrument Panel, Heater-A/C Panel, and Radio Lights turn on
Turn the Dimmer Control through its range	Lights brighten in one direction and dim in the other

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

COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Lights Monitoring Module	Behind I/P, at base of steering column	
Remote Dimmer	RH side of steering column, on I/P retainer	201-10-A
C212 (12 cavities)	Behind center of I/P	201-13-B
C218	Behind center of I/P	201-12-A
C220 (2 cavities)	Behind top LH side of I/P, near headlight switch.	201-10-A
G200	Behind I/P, left of steering column	201-10-A
S204	I/P harness, behind instrument cluster	201-10-A
S205	I/P harness, behind instrument cluster	201-10-A
S207	I/P harness, at head of console	201-10-A
S225	I/P harness, behind instrument cluster	201-10-A
S274	I/P harness, at head of console	201-12-C

SYSTEM DIAGNOSIS

WITH DIGITAL CLUSTER

- **Perform the following tests if the Interior Lights dimming functions do not operate properly.**

(Continued on facing page)

INTERIOR LIGHTS DIMMING

(Continued from facing page)

A: INTERIOR LIGHTS DIMMING TEST

Connect: TEST LAMP
At: FUSE BLOCK-HOT SIDE OF INST LP FUSE
Conditions:
- **Ignition Switch: RUN**
- **INST LP Fuse: REMOVED**
- **Light Switch: PARK**
- **Dimmer Control: HI**

Connect Between	Correct Result	For Diagnosis
INST LP Fuse cavity (DK GRN) & Ground	Test Lamp lights	See 1
• Slowly turn Dimmer Control to LO		
INST LP Fuse cavity (DK GRN) & Ground	Test Lamp dims	See 1

- If all results are correct but Interior Lights do not work, check the GRY (8) wire for an open (see schematic).

1. Check DK GRN (44) wire for an open. If wire is good, do Test B.

B: REMOTE DIMMER TEST

Connect: TEST LAMP
At: REMOTE DIMMER CONNECTOR (Connected)
Conditions:
- **Light Switch: PARK**
- **Dimmer Control: HI**

Connect Between	Correct Result	For Diagnosis
D (BRN) & Ground	Test Lamp lights	See 1
B (BLK/LT GRN) & Ground	Test Lamp lights	See 2
C (DK GRN) & Ground	Test Lamp lights	See 3
• Slowly turn Dimmer Control to LO		
C (DK GRN) & Ground	Test Lamp dims	See 3

- If all results are correct, check the DK GRN (44) wire for an open (see schematic).

1. Check BRN (9) wire for an open (see schematic).
2. Check BLK/LT GRN (844) wire for an open (see schematic). If wire is good, do Test C.
3. Replace Remote Dimmer.

C: LIGHT SWITCH TEST

Connect: TEST LAMP
At: LIGHT SWITCH CONNECTOR C2 (Connected)
Conditions:
- **Ignition Switch: RUN**
- **Light Switch: PARK**
- **Dimmer Control: HI**

Connect Between	Correct Result	For Diagnosis
D (PNK/BLK) & Ground	Test Lamp lights	See 1
A (DK GRN/ WHT) & Ground	Test Lamp lights	See 2
• Slowly turn Dimmer Control to LO		
A (DK GRN/ WHT) & Ground	Test Lamp dims	See 2

- If all results are correct but Interior Lights do not dim, check the DK GRN/WHT (744) wire for an open. If wire is good, replace Instrument Cluster.

1. Check the PNK/BLK (39) wire for an open.
2. Repair/replace the Light Switch.

(Continued on next page)

INTERIOR LIGHTS DIMMING

(Continued from previous page)

WITHOUT DIGITAL CLUSTER

A: INTERIOR LIGHTS DIMMING TEST

Connect: TEST LAMP
At: FUSE BLOCK-HOT SIDE OF INST LP FUSE
Conditions:
- **Ignition Switch: RUN**
- **INST LP Fuse: REMOVED**
- **Light Switch: PARK**
- **Dimmer Control: BRIGHT**

Connect Between	Correct Result	For Diagnosis
INST LP Fuse cavity (DK GRN) & Ground	Test Lamp lights	See 1
• Slowly turn Dimmer Control to DIM		
INST LP Fuse cavity (DK GRN) & Ground	Test Lamp dims	See 1

- If all results are correct but Interior Lights do not work, check the GRY (8) wire for an open (see schematic).

1. Check DK GRN (44) wire for an open. If wire is good, do Test B.

B: REMOTE DIMMER TEST

Connect: TEST LAMP
At: REMOTE DIMMER CONNECTOR (Connected)
Conditions:
- **Light Switch: PARK**
- **Dimmer Control: BRIGHT**

Connect Between	Correct Result	For Diagnosis
D (BRN) & Ground	Test Lamp lights	See 1
B (DK GRN/WHT) & Ground	Test Lamp lights	See 2
C (DK GRN) & Ground	Test Lamp lights	See 3
• Slowly turn Dimmer Control to DIM		
C (DK GRN) & Ground	Test Lamp dims	See 3

- If all results are correct, check the DK GRN (44) wire for an open (see schematic).

1. Check BRN (9) wire for an open (see schematic).
2. Check DK GRN/WHT (844) wire for an open (see schematic). If wire is good, do Test C.
3. Replace Remote Dimmer.

C: LIGHT SWITCH TEST

Connect: TEST LAMP
At: LIGHT SWITCH CONNECTOR C2 (Connected)
Conditions:
- **Light Switch: PARK**
- **Dimmer Control: BRIGHT**

Connect Between	Correct Result	For Diagnosis
D (BRN) & Ground	Test Lamp lights	See 1
A (DK GRN/WHT) & Ground	Test Lamp lights	See 2
• Slowly turn Dimmer Control to DIM		
A (DK GRN/WHT) & Ground	Test Lamp dims	See 2

- If all results are correct but Interior Lights do not dim, check the DK GRN/WHT (844) wire for an open.

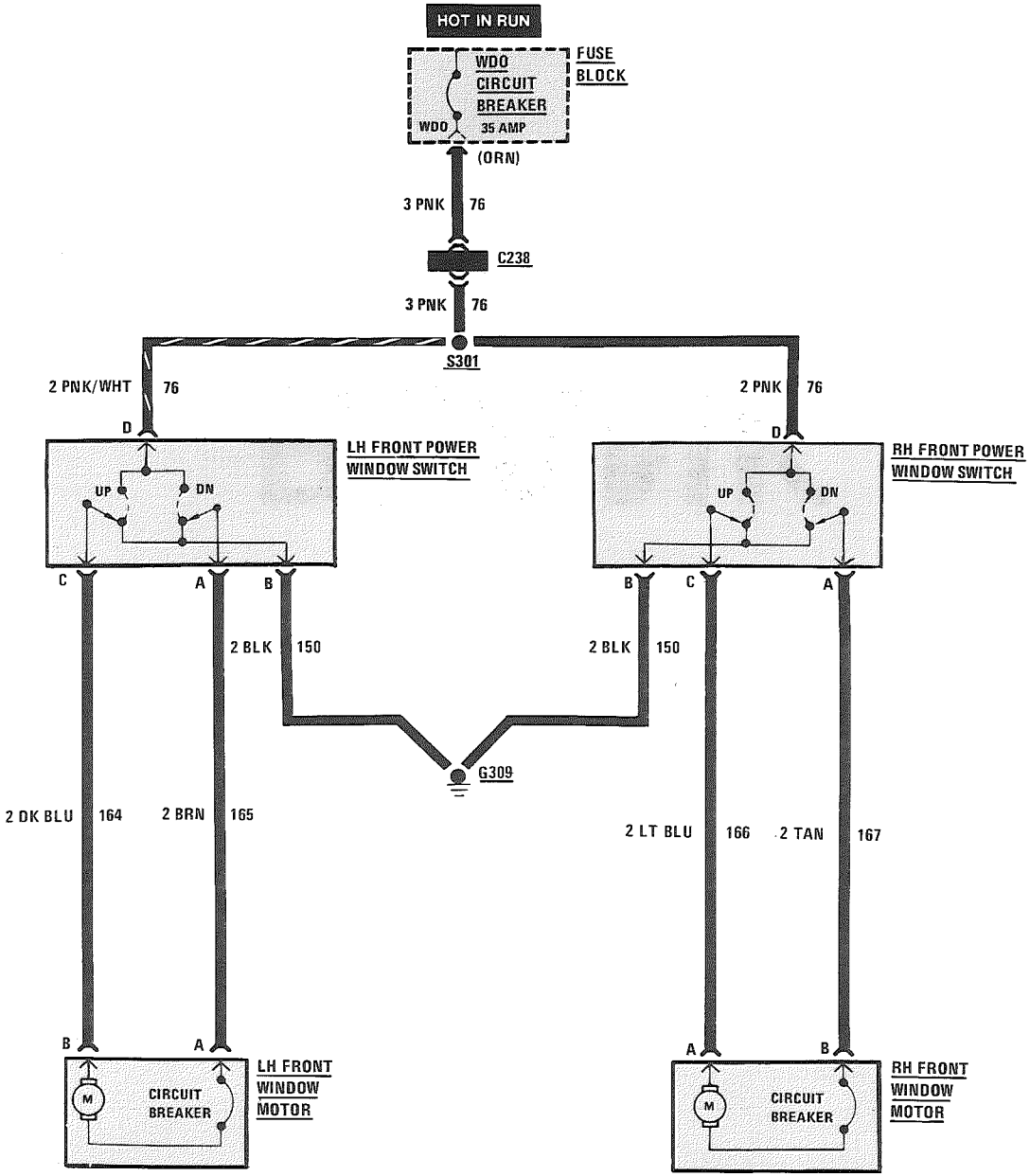
1. Check the BRN (9) wire for an open.
2. Repair/replace the Light Switch.

CIRCUIT OPERATION

Voltage is applied at all times to the Light Switch through the Tail Fuse. With the Light Switch in HEAD or PARK, voltage is applied through the Light Switch, Remote Dimmer, and INST LP Fuse to the various Instrument Panel and Console Lights. The lights can be dimmed using the rheostat in the Light Switch.

BLANK

POWER WINDOWS



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. If no windows operate, check the WDO Circuit Breaker by visual inspection.
2. If no windows operate, check that ground G309 is clean and tight.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

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

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
Operate the LH Front Window UP and DN from the LH Front Power Window Switch	LH Front Window operates quietly and smoothly, with no sticking
Operate the RH Front Window UP and DN from the RH Front Power Window Switch	RH Front Window operates quietly and smoothly, with no sticking

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

COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Window Motors	In lower front corner of each door	201-18-A
C238 (12 cavities)	LH shroud, ahead of center access hole	201-11-C
G309	Below rear of console	
S301	Crosscar harness, below LH front seat	

SYSTEM DIAGNOSIS

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

SYMPTOM TABLE

SYMPTOM	FOR DIAGNOSIS
No Power Windows operate	Check PNK (76) wire to splice S301 for an open. If wire is OK, perform tests A and B
LH Front Power Window does not operate	A: LH Front Power Window Switch Test C: Window Motor Test
RH Front Power Window does not operate	B: RH Front Power Window Switch Test C: Window Motor Test

A: LH FRONT POWER WINDOW SWITCH TEST

Connect: TEST LAMP
At: LH FRONT POWER WINDOW SWITCH CONNECTOR (Connected)
Condition:
- Ignition Switch: RUN

Connect Between	Correct Result	For Diagnosis
D (PNK/WHT) & Ground	Test Lamp Lights	See 1
D (PNK/WHT) & B (BLK)	Test Lamp Lights	See 2

- Operate LH Front Power Window Switch UP and DN

(A: LH FRONT POWER WINDOW SWITCH TEST continued on next page)

(A: LH FRONT POWER WINDOW SWITCH TEST continued from previous page)

C (DK BLU) & A (BRN)	Test Lamp Lights	See 3

- If all the results are correct, go to Test C.
1. Check PNK/WHT (76) wire for an open (see schematic).
2. Check BLK (150) wire for an open (see schematic).
3. Replace LH Front Power Window Switch

B: RH FRONT POWER WINDOW SWITCH TEST

Connect: TEST LAMP
At: RH FRONT POWER WINDOW SWITCH CONNECTOR (Connected)
Condition:
- **Ignition Switch: RUN**

Connect Between	Correct Result	For Diagnosis
D (PNK) & Ground	Test Lamp Lights	See 1
D (PNK) & B (BLK)	Test Lamp Lights	See 2
• Operate RH Front Power Window Switch UP and DN		
C (LT BLU) & A (TAN)	Test Lamp lights	See 3

- If all the results are correct, go to Test C.
1. Check PNK (76) wire for an open (see schematic).
2. Check BLK (150) wires for an open (see schematic).
3. Replace RH Front Power Window Switch.

C: WINDOW MOTOR TEST

Connect: TEST LAMP
At: SUSPECT WINDOW MOTOR CONNECTOR (Disconnected)
Conditions:
- **Ignition Switch: RUN**
- **Operate associated Power Window Switch UP and DN**

Connect Between	Correct Result	For Diagnosis
A (BRN) or (LT BLU) & B (DK BLU) or (TAN)	Test Lamp Lights	See 1

- If the result is correct, replace the Window Motor. Refer to the Body Section 5 for replacement procedures.
1. Check the wiring to the Window Motor for an open (see schematic).

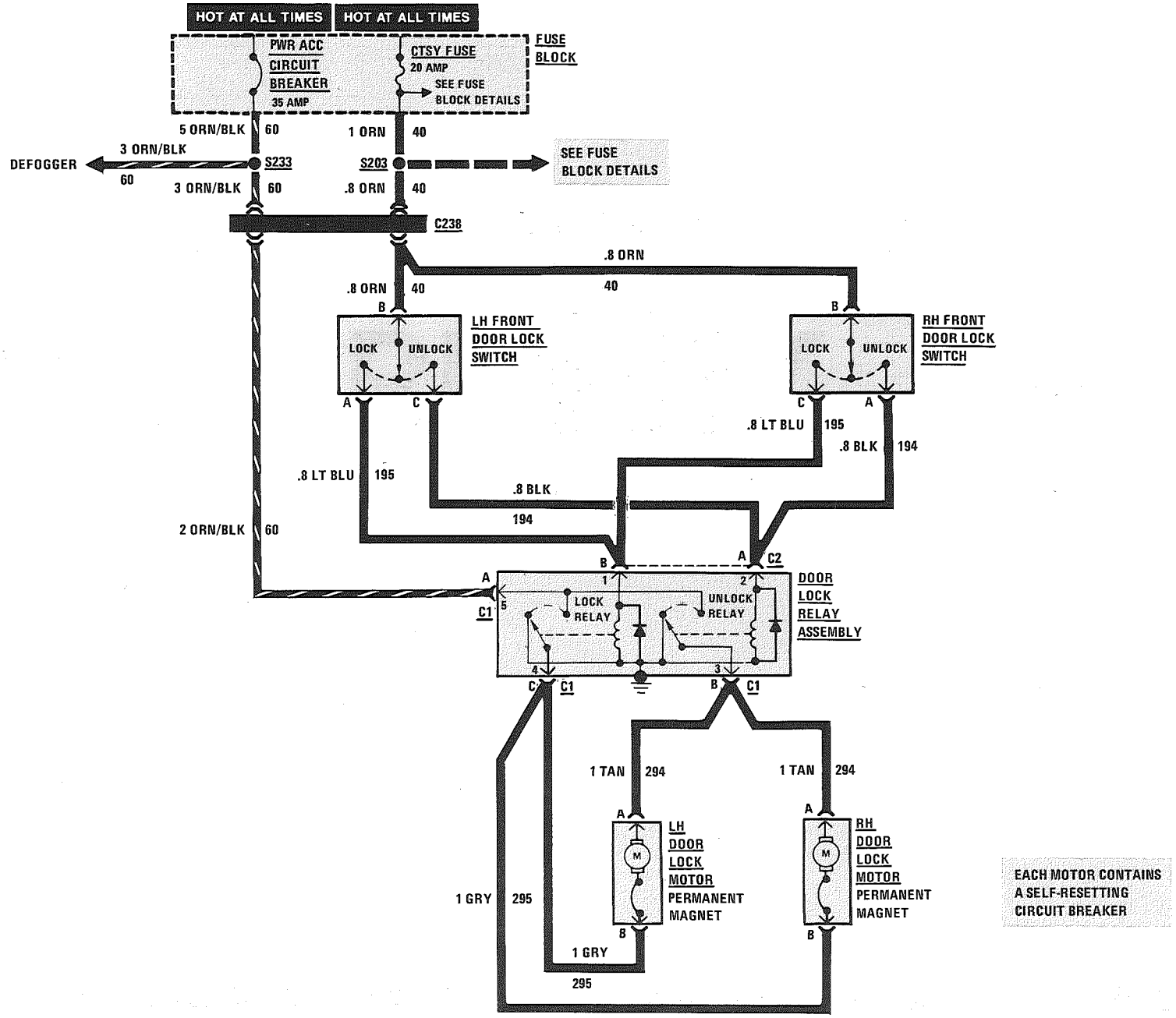
CIRCUIT OPERATION

With the Ignition Switch in RUN, voltage is applied through the WDO Circuit Breaker and the PNK and PNK/WHT wires to the Power Window Switches. With the LH Front Power Window Switch in UP, voltage is applied through the WDO Circuit Breaker, the LH Front Power Window Switch, and the DK BLU wire to the LH Front Window Motor. The Motor is grounded through the BRN wire and the DN contacts of the LH Front Window Switch to G309. The motor runs and the window goes up. Voltage is similarly applied with the RH Front Power Window Switch in UP.

In DN, voltage is applied to each motor in the opposite direction and the window goes down.

BLANK

POWER DOOR LOCKS



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the PWR ACC Circuit Breaker by operating the Defogger.
2. Check the CTSY Fuse by operating the Horn.
3. Check that the Door Lock Relay Assembly case ground is making good contact.
4. If one or more of the door lock motors do not operate properly, but the other door locks function normally, check the wiring to the motors. If the wiring is correct, replace that motor.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

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

SYSTEM CHECK TABLE

ACTION	NORMAL OPERATION
Operate the LH Door Lock Switch	All the doors lock and unlock
Operate the RH Door Lock Switch	All the doors lock and unlock

(Continued in next column)

COMPONENT LOCATION

		Page-Figure
Door Lock Motors	In each door, near lower rear corner	201-18-A
Door Lock Relay Assembly	LH shroud, near lower access hole	201-11-B
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
C238 (12 cavities)	LH shroud, ahead of center access hole	201-11-C
S203	I/P harness, behind instrument cluster	201-10-A
S233	I/P harness, above Fuse Block	201-10-A

(Continued from previous column)

Unlock one door using the vehicle key	That door unlocks, but the other doors remain unlocked
With all the doors closed and locked, operate the inside door handle to try to open each door	The doors will not open
Open the LH door and move the LH Door Lock Switch to the LOCK position, close the door, and try to open each door from the outside	The doors will not open

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

SYSTEM DIAGNOSIS

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

SYMPTOM TABLE

SYMPTOM	DO TEST
Only one door does not lock or unlock	A: Door Lock Motor Test on suspect Door Lock Motor
The Power Door Locks do not operate from one Door Lock Switch	B: Door Lock Switch Test on suspect Door Lock Switch
The Power Door Locks do not operate from any Door Lock Switch	C: Door Lock Relay Test B: Door Lock Switch Test

(Continued on next page)

(Continued from previous page)

A: DOOR LOCK MOTOR TEST

Measure: VOLTAGE
At: SUSPECT DOOR LOCK MOTOR CONNECTOR (Disconnected)
Condition:
• LH Door Lock Switch: UNLOCK and hold

Measure Between	Correct Voltage	For Diagnosis
A (TAN) & Ground	Battery	See 1
A (TAN) & B (GRY)	Battery	See 2

- If all the voltages are correct, replace the suspect Door Lock Motor.

1. Check the TAN (294) wire for an open (see schematic).
2. Check the GRY (295) wire for an open (see schematic).

B: DOOR LOCK SWITCH TEST

Measure: VOLTAGE
At: SUSPECT DOOR LOCK SWITCH CONNECTOR (Connected)

Measure Between	Correct Voltage	For Diagnosis
B (ORN) & Ground	Battery	See 1
• Move the Door Lock Switch to LOCK and hold		
LT BLU (195) & Ground	Battery	See 2
• Move the Door Lock Switch to UNLOCK and hold		

(Continued in next column)

(Continued from previous column)

BLK (194) & Ground	Battery	See 2

- If all the voltages are correct, check the LT BLU (195) wire and BLK (194) wires for an open (see schematic).

1. Check the CTSY Fuse. Check the ORN (40) wire for an open (see schematic).
2. Replace the suspect Door Lock Switch.

C: DOOR LOCK RELAY TEST (TABLE 1)

Connect: TEST LAMP
At: DOOR LOCK RELAY CONNECTOR C1 (Disconnected)

Connect Between	Correct Result	For Diagnosis
A (ORN/BLK) & Ground	Test Lamp lights	See 1

- If the result is correct, proceed to Table 2.

1. Check the PWR/ACC Circuit Breaker and the ORN/BLK (60) wire for an open (see schematic).

C: DOOR LOCK RELAY TEST (TABLE 2)

Connect: TEST LAMP
At: DOOR LOCK RELAY CONNECTORS C1 & C2 (Connected)
Condition:
• Door Lock Switch: LOCK and hold

Connect Between	Correct Result	For Diagnosis
C2: B (LT BLU) & Ground	Test Lamp lights	See 1
C1: C (GRY) & Ground	Test Lamp lights	See 3
C1: C (GRY) & C1: B (TAN)	Test Lamp lights	See 3
• Move the Door Lock Switch to UNLOCK and hold		
C2: A (BLK) & Ground	Test Lamp lights	See 2
C1: B (TAN) & Ground	Test Lamp lights	See 3
C1: C (GRY) & C1: B (TAN)	Test Lamp lights	See 3

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- If all the results are correct, check the TAN (294) and GRY (295) wires for opens (see schematic). If the wires are OK, do Test A.

1. Check the LT BLU (195) wire for an open (see schematic). If the wire is good, do Test B.
2. Check the BLK (194) wire for an open (see schematic). If the wire is good, do Test B.
3. Replace the Door Lock Relay.

CIRCUIT OPERATION

When a Door Lock Switch is activated in the Power Door Lock system, all of the doors will lock or unlock in unison. Each lock can also be operated manually from the locking post. The locks are operated by reversible Motors that receive voltage from two relays in the Door Lock Relay Assembly. These relays operate to turn the Motors on by applying a voltage to one of the terminals and a ground to the other terminal.

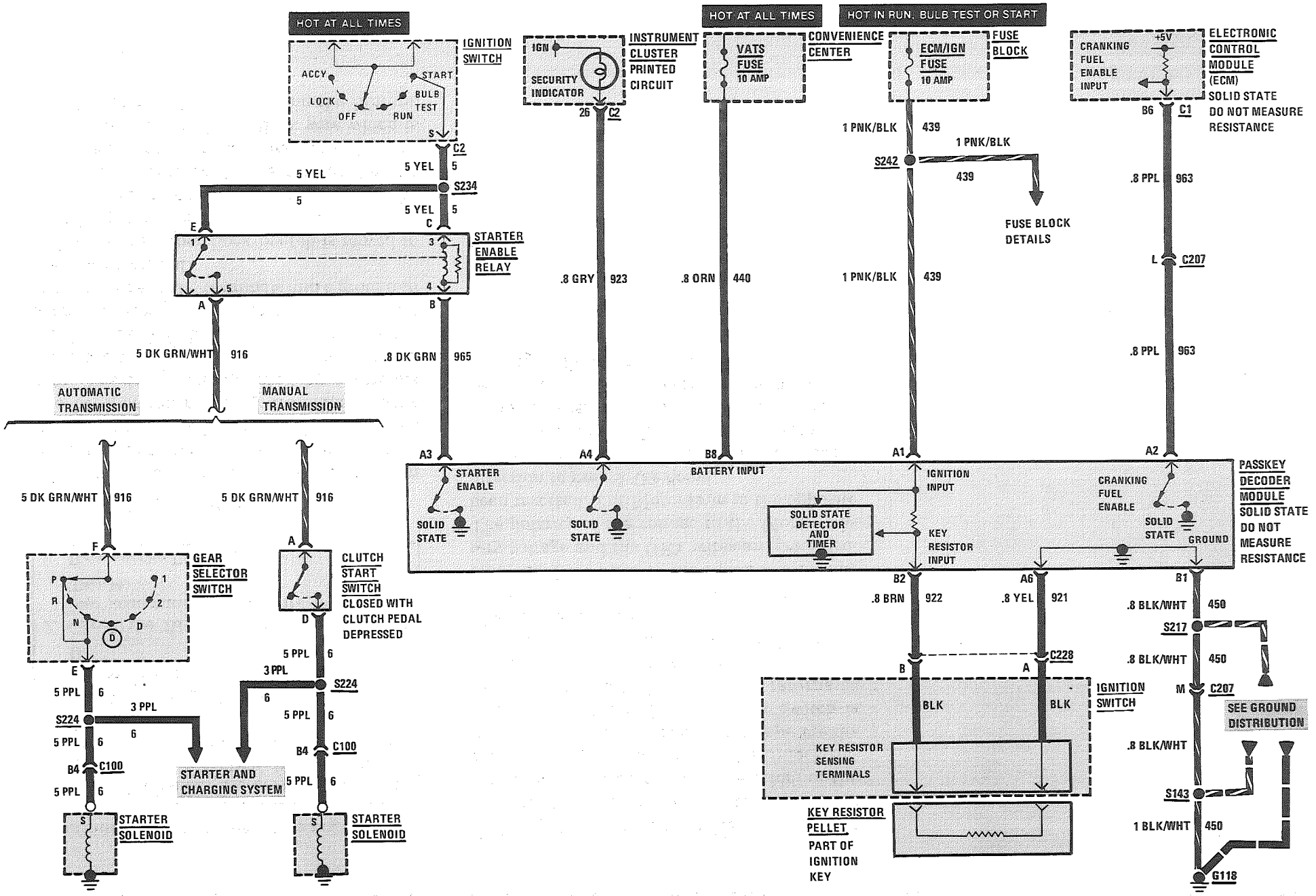
When either Door Lock Switch is moved to the LOCK position, it completes the circuit to the coil of the Door Lock Relay Assembly. The lock relay is energized. The contact for the Lock Relay closes, and is connected to battery voltage through the ORN/BLK wire which is the high current feed for driving the Motors.

Voltage is then applied to the GRY wire and the Door Lock Motors, which are grounded by the TAN wire from the other terminal of the Motor through the contact for the Unlock Relay. The Motor in each door runs to operate the Door Locks. When the Door Lock Switch is released, the Lock Relay contact returns to ground and the Motors turn off.

A similar action occurs with the unlock relay when it is energized by either of the Door Lock Switches closing to the UNLOCK position. Now the TAN wires to the Motors carry battery voltage and the GRY wires are grounded. The polarity of the voltage to the Motors has been reversed. The Motors run in the opposite direction to unlock the doors.

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

THEFT DETERRENT SYSTEM: PASSKEY



THEFT DETERRENT SYSTEM: PASSKEY

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the key pellet sensing contacts in the Ignition Lock Cylinder by looking into the key opening. If the contacts are damaged, replace the Lock Cylinder.
2. Check the VATS Fuse by visual inspection.
3. Check owner's ignition key using the J35628 VATS Interrogator or equivalent. If the Key Code window shows "E", replace the owner's key.
4. Check the Security Indicator Bulb.
5. Check the C/H Fuse by visual inspection.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

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

SYSTEM CHECK TABLE

Put the Ignition Switch in RUN	Security Indicator lights for approximately 2 seconds If Indicator does not light do Test E

(Continued on next page)

COMPONENT LOCATION

		Page-Figure
Clutch Start Switch	Above clutch pedal, on clutch pedal support	
Convenience Center	Behind I/P, to right of steering column	201-10-A
Electronic Control Module (ECM)	Behind RH side of I/P	201-12-B
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Gear Selector Switch	In console, at base of gear selector	201-11-E
Ignition Switch	Behind I/P, on top side of steering column	201- 9-A
Starter Enable Relay	Behind LH side of I/P, left of steering column	
Starter Solenoid (VIN E)	Lower RH side of engine	201- 2-A
Starter Solenoid (VIN F) (VIN 8)	Lower RH side of engine	201- 6-B
Starter Solenoid (VIN S)	Lower RH side of engine	201- 1-A
VATS Decoder Module	Behind LH side of I/P, above steering column	
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C207 (15 cavities)	Behind RH side of I/P, near ECM	201-13-A
C228	Behind I/P, on upper RH side of steering column	
G118 (VIN E)	Rear of RH cylinder head	201- 5-B
G118 (VIN F) (VIN 8)	Rear of RH cylinder head	201- 5-A
G118 (VIN S)	Rear of RH cylinder head	201- 1-C
S143 (VIN E)	Engine harness, RH front of dash	201- 2-A
S143 (VIN F) (VIN 8)	Engine harness, RH front of dash	201- 6-A
S143 (VIN S)	Engine harness, center front of dash	201- 1-A
S217	I/P harness, behind center of I/P	201-10-A
S224	I/P harness, near LH shroud	
S234	I/P harness, above Fuse Block	201- 9-A
S242	I/P harness, behind RH side of I/P	201-13-A

(Continued from previous page)

Insert ignition key into ignition key lock and turn Ignition Switch to START	If engine starts, proceed to next step If engine does not start, proceed to System Diagnosis
Do the following to check that PASSKEY will detect the use of an incorrect key Shut off engine Remove hush panel under steering column and disconnect C228 (Two-cavity connector at base of steering column)	
Attempt to start engine	Engine should not crank If engine cranks, do Starter Enable Relay Test in System Diagnosis
Reconnect C228 and attempt to start engine again (must be done within two minutes of first attempt)	Engine should not crank If engine cranks, replace PASSKEY Decoder Module
Turn Ignition Switch to OFF Wait four minutes and turn Ignition Switch to START	Engine starts normally
Replace hush panel	

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

SYSTEM DIAGNOSIS

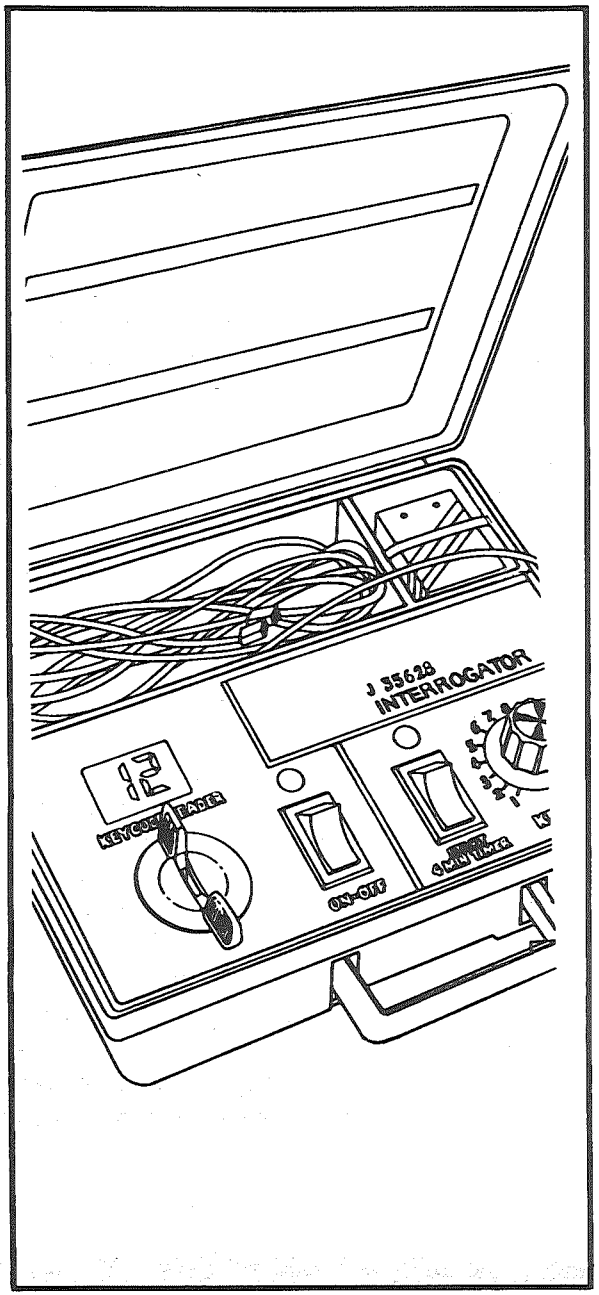
Use the following table to determine the procedure to use. If engine won't crank, or cranks but won't start, enter ECM Diagnostic Mode and check for display of code 46.

There are four "No Start" conditions that can occur on a vehicle equipped with PASSKEY that may appear to be caused by PASSKEY. The four conditions are given in the following table. The first of these is almost certain to be a PASSKEY problem. The second and third can be caused by other systems on the vehicle. The fourth symptom is definitely not related to PASSKEY.

SYMPTOM TABLE

No Crank ECM Code 46 Present	A: Lock Cylinder and Harness Test B: Decoder Module Test
Crank but no Start ECM Code 46 Present	D: ECM Enable Test
No Crank No ECM Code 46	C: Starter Enable Relay Test
Crank but no Start No ECM Code 46	Refer to Section 6E
Security Indicator does not work properly	E: Security Indicator open test

- **If your symptom is not one of the symptoms listed, do all the following tests.**



A: LOCK CYLINDER AND HARNESS TEST

1. Remove the hush panel under the steering column. Disconnect the two-cavity connector in the wire leading into the steering column. Connect the male and female parts to the mating connectors on the pigtails from the J35628 Interrogator or equivalent.
2. Insert the customer's ignition key into the Ignition Switch Lock Cylinder.
3. Press the On-Off switch on the J35628 Interrogator to the ON position.

- The window above the Key Code Reader indicates the electrical code for the key (1 to 15) or "E" error.
- Rotate the ignition lock cylinder while the key is inserted to insure that the correct code is read in all positions.

— If the code is correct in all positions, proceed to step 5.

— If code is not correct in all positions, replace the Lock Cylinder.

- If the window shows "E", proceed to step 4.

4. Check the customer's ignition key by inserting it in the Key Code Reader on the J35628 Interrogator.

- If the Interrogator indicates "E", replace the key with a spare or follow the procedures under Key Replacement.
- If Interrogator shows the electrical code (1 to 15), replace the Lock Cylinder. (See procedure following Key Duplication Procedure).

5. Set the Key Code Selector on the J35628 Interrogator to the same electrical code determined in step 3. Turn the Ignition Switch to START.

- If engine starts, reconnect vehicle wiring and check that the two-cavity connector at the base of the steering column mates correctly.
- If engine does not start, go to Test B, Decoder Module Test.

B: PASS KEY DECODER MODULE TEST (TABLE 1)

Measure: VOLTAGE
At: PASSKEY DECODER MODULE CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis
A1 (PNK/BLK) & Ground	Battery	See 1
B8 (ORN) & Ground	Battery	See 2
A1 (PNK/BLK) & B1 (BLK/WHT)	Battery	See 3
A2 (PPL) & B1 (BLK/WHT)	5 Volts	See 4
• Ignition Switch: START		
A3 (DK GRN) & Ground	Battery	See 5
• If voltages are correct, go to Table 2.		

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1. Check the PNK/BLK (439) wire and C/H Fuse for an open.
2. Check the ORN (440) wire and VATS Fuse for an open.
3. Check the BLK/WHT (450) wire for an open.
4. Check the PPL (963) wire for an open. If wire is good, replace ECM.
5. Check DK GRN (965) wire for an open. If wire is good, do Test C.

B: PASSKEY DECODER MODULE TEST (TABLE 2)

Measure: RESISTANCE
At: PASSKEY DECODER MODULE CONNECTOR (Disconnected)
Conditions:
- **Negative Battery Terminal Disconnected**
- **No Key In Ignition Switch**

Measure Between	Correct Resistance	For Diagnosis
A6 (YEL) & UB2 (BRN)	Open circuit	See 1
• Key in Ignition		
A6T (YEL) & UB2 (BRN)	380 to 12.3K ohms	See 2
• If resistance is correct but engine will not crank, replace the PASSKEY Decoder Module.		

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Note: When the PASSKEY Decoder Module is replaced, the new key code may not match the code in the owner's existing keys. If it does not match, then new keys must be made. Use the key duplication procedure.

1. Check YEL (921) and BRN (922) wires for shorts to ground or between the two wires.
2. Check YEL (921) and BRN (922) wires for an open.

C: STARTER ENABLE RELAY TEST

Measure: VOLTAGE
At: STARTER ENABLE RELAY CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: START**

Measure Between	Correct Voltage	For Diagnosis
E (YEL) & Ground	Battery	See 1
C (YEL) & Ground	Battery	See 1

- If voltages are correct, go to C2.

1. Check YEL (5) wire for an open. If wire is good but voltage is not present, go to 8A-30 for diagnosis of Starter and Charging Circuits.

C2. Connect a fused jumper between terminals E (YEL) wire and A (DK GRN/WHT) wire of the Starter Enable Relay Connector. Turn Ignition Switch to START.

- If engine cranks proceed to C3.
- If engine does not crank, go to page 30-0 for diagnosis of Starter and Charging Circuits.

C3. Reconnect the Starter Enable Relay and connect a fused jumper from terminal A3 (DK GRN) wire of the PASSKEY Decoder Module to ground. Turn Ignition Switch to START.

- If engine cranks, replace the PASSKEY Decoder Module.
- If engine does not crank, check the DK GRN (965) wire for an open. If wire is OK, replace the Starter Enable Relay.

D: ECM ENABLE SIGNAL TEST

Measure: VOLTAGE
At: PASSKEY DECODER MODULE CONNECTOR (Connected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis
A2 (PPL) & Ground	5 Volts	See 1

- Ignition Switch: START
- Wait four minutes from last time Ignition Switch was turned to OFF to allow PASSKEY Internal timer to reset.

A2 (PPL) & Ground	2 to 3 Volts	See 2

- If voltages are correct, cranking Fuel Enable signal is operating normally, return to Symptom Table.

1. Check PPL (963) wire for an open.

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2. Replace PASSKEY Decoder Module.

Note: When the PASSKEY Decoder Module is replaced, the key code it is set for may not match the code in the owner's keys. If it does not, then new keys must be made. Use the procedure under Duplication of Keys.

E: SECURITY INDICATOR OPEN TEST

Measure: VOLTAGE
At: PASSKEY DECODER MODULE CONNECTOR (Disconnected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis
A4 (GRY) & Ground	Battery	See 1

- If voltage is correct do Test B.

1. Check the GRY (923) wire for an open or short to ground. If OK replace the Instrument Cluster (see section 8C).

KEY DUPLICATION PROCEDURE

Key Replacement (Spare Key Available)

The J35628 Interrogator or equivalent must be used to determine the proper electrical code of the key.

1. Insert the customer's spare ignition key into the Key Code Reader on the J35628 Interrogator.
2. Press the On-Off rocker switch to the ON position.

3. A number from 1 to 15 will appear in the window designating the electrical code of the key.
4. Cut a new key having the electrical code determined from the J35628 Interrogator.
5. Start the engine using the new key to insure that the key is correct both mechanically and electrically.

Key Replacement (No Spare Key Available)

1. If the Ignition Key is lost and there is no spare key, determine the mechanical code from the code on the Ignition Key Lock Cylinder. The code may also be determined from the dealer invoice for the car, or from the Chevrolet Zone Office.
2. Cut a new key to this mechanical code. Use a blank PASSKEY test key which has no resistance pellet. This key will be used to operate the Ignition Switch for the remaining steps.
3. Remove the hush panel under the steering column and disconnect C281 (two-cavity connector leading into the steering column).
4. Insert the male half of the connector into the female pigtail connector from the J35628 Interrogator.
5. Set the Key Code Selector on the Interrogator (J35628 or equivalent) to "1".
6. Attempt to start engine using the key made in step 2.

- If engine starts, the Key Code Selector is set to the correct electrical code. Cut a new key having this electrical code. The new key will be customer's replacement key.
- If engine does not start, turn Ignition Switch to OFF, then turn the Key Code Selector to the next higher position. Wait four minutes and attempt to start the engine using the new electrical code. Use the 4-minute Timer on the J35628 Interrogator to indicate the 4-minute interval. Start the Timer by depressing the "Start" rocker switch. The red indicator will turn off at the end of a four minute interval.

CIRCUIT OPERATION

Resistor sensing contacts are located in the Ignition Key Lock Cylinder. These contact the Key Resistor Pellet on the key when it is inserted. When the lock is rotated, battery is applied through the C/H Fuse to the PASSKEY Decoder Module. The Pellet resistance is then compared against a fixed resistance in the Module.

If the Key Pellet is the proper resistance, terminal A3 is grounded, energizing the Starter Enable Relay. At the same time, a signal is applied at terminal A2 to enable the Electronic Control Module (ECM). When this signal is received by the Electronic Control Module (ECM), it allows fuel injector pulses to begin.

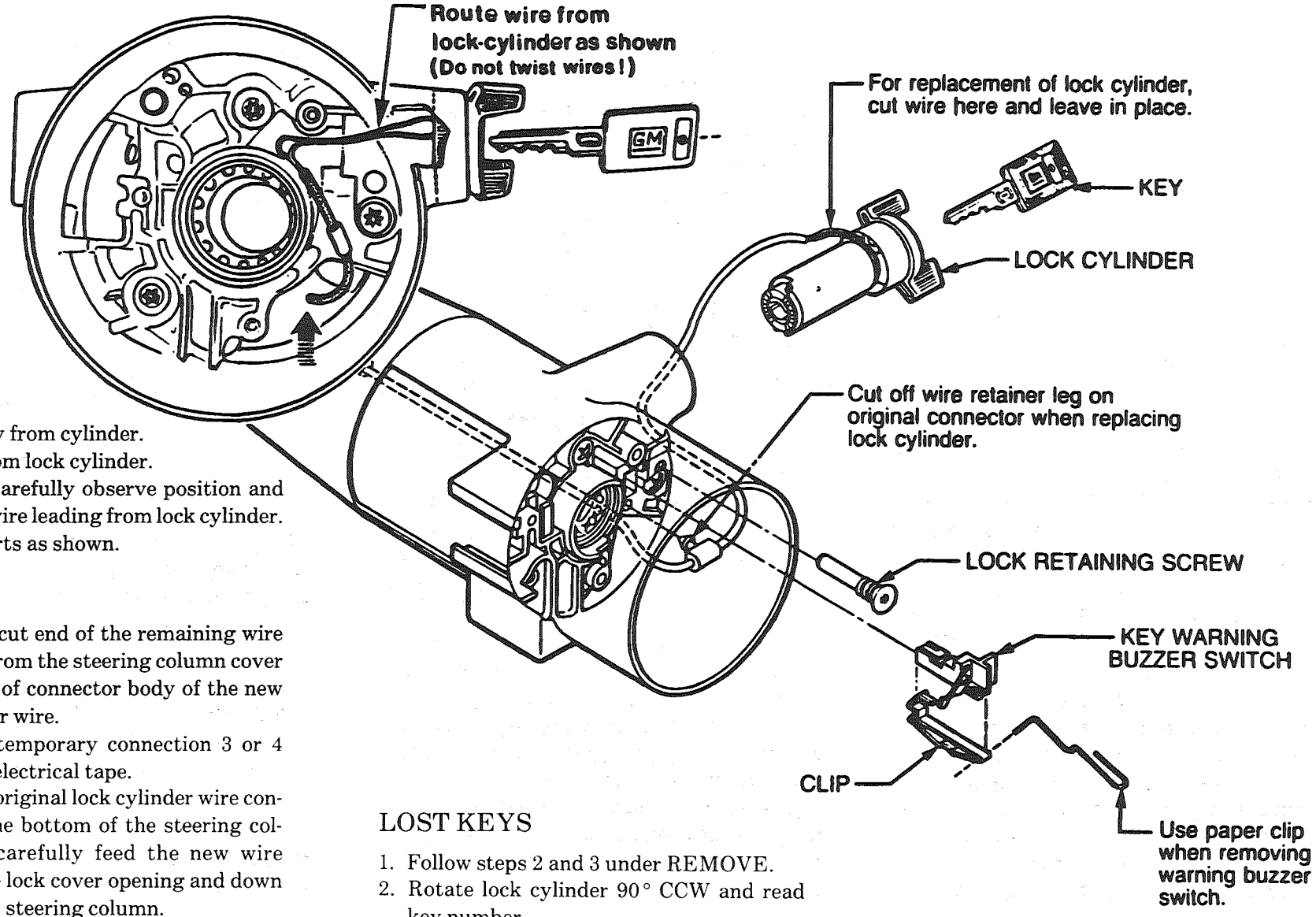
If the Key Resistor Pellet is the wrong value, the PASSKEY Decoder Module will shut down for 2 to 4 minutes. During this interval there will be no output at terminals A3 or A2.

If the Ignition Switch is turned on again during this interval, the Timer will begin over again and the PASSKEY Decoder Module will remain shut down for another 2 to 4 minutes. The PASSKEY Decoder Module will continue this process even if a key with the correct pellet is used to turn the ignition back on. The Timer is restarted by the ignition voltage at terminal A1 when Ignition Switch is turned to RUN.

Once the Timer has completed its 2 to 4 minute cycle with the ignition off, the PASSKEY Decoder Module and Timer are reset. A key having the correct code can then be used to start the engine.

The Security Indicator is controlled directly by the PASSKEY Decoder Module. If there is a PASSKEY Failure this indicator will be grounded by the PASSKEY Decoder Module with the ignition in RUN, BULB TEST or START. When the Ignition Switch is first placed in RUN, BULB TEST or START the Indicator lights for about 2 seconds as a bulb check.

REMOVE AND INSTALL IGNITION LOCK AND KEY WARNING BUZZER



REMOVE

1. Remove key from cylinder.
2. Cut wire from lock cylinder.
3. NOTE — Carefully observe position and routing of wire leading from lock cylinder.
4. Remove parts as shown.

INSTALL

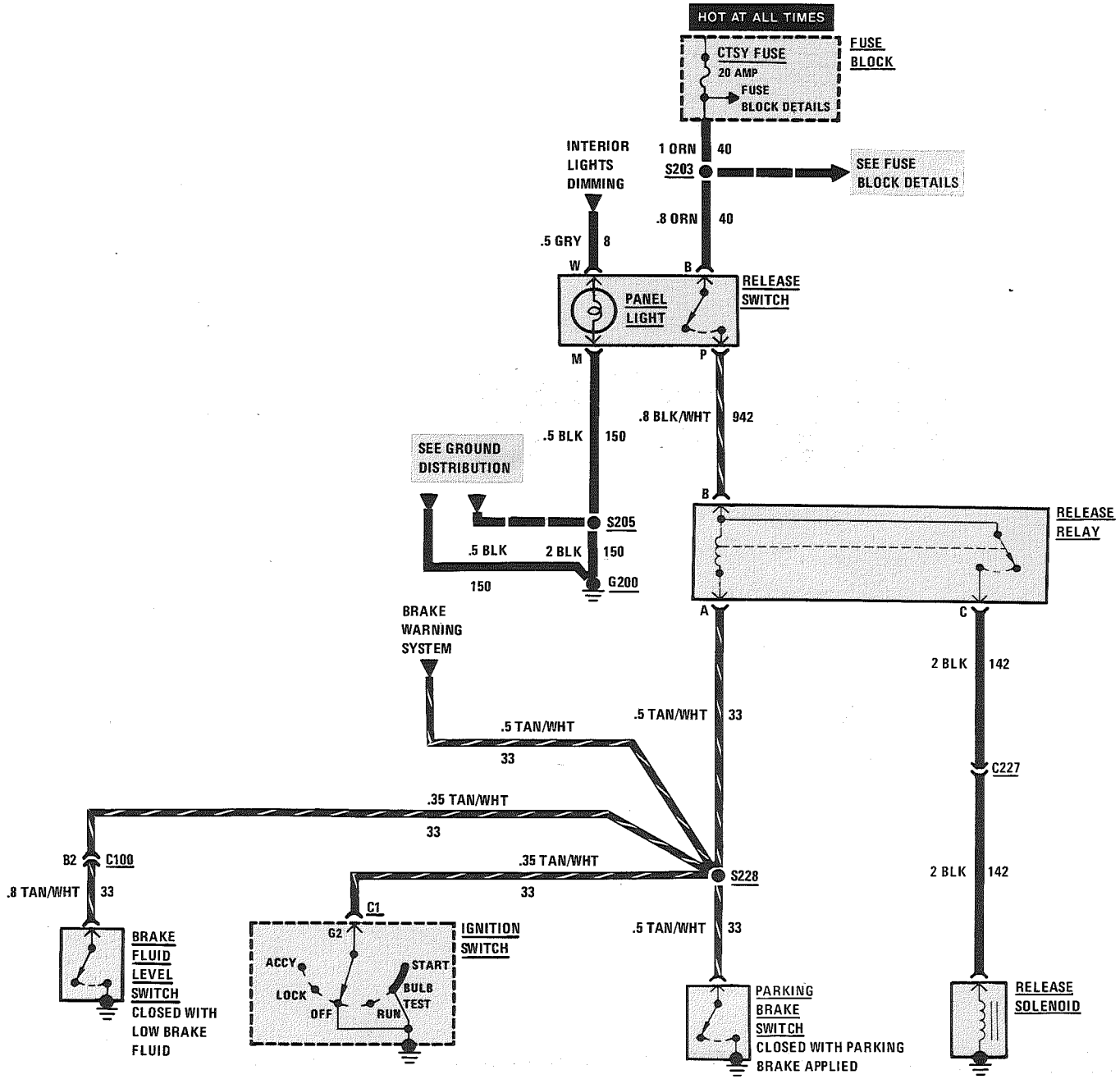
1. Attach the cut end of the remaining wire extending from the steering column cover to the back of connector body of the new lock cylinder wire.
2. Wrap this temporary connection 3 or 4 times with electrical tape.
3. Pull on the original lock cylinder wire connector at the bottom of the steering column, and carefully feed the new wire through the lock cover opening and down through the steering column.
4. Route wire as it originally was and insert wire retaining grommet.

LOST KEYS

1. Follow steps 2 and 3 under REMOVE.
2. Rotate lock cylinder 90° CCW and read key number.
3. Reinstall lock cylinder and route attached wire as shown.

BLANK

HATCH RELEASE



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Diagnosis.**

1. Check the CTSY Fuse by operating the Radio.
2. Check that the Hatch Release Solenoid case ground is clean and tight.
3. Check the Parking Brake Switch by applying Parking Brake with Ignition Switch in RUN and observing the BRAKE Indicator.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
Press Hatch Release button with the Park Brake Applied	Hatch Lid Unlatches

SYSTEM DIAGNOSIS

- **Do the tests below if the Hatch Release does not operate properly.**

COMPONENT LOCATION

		Page-Figure
Brake Fluid Level Switch	Below brake fluid reservoir	201-16-A
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Ignition Switch	Behind I/P, on top side of steering column	201- 9-A
Parking Brake Switch	In console, at base of parking brake	201-12-D
Release Relay	Taped to I/P harness, behind RH side of I/P	201-13-A
Release Solenoid	On center of end panel	201-16-C
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C227 (1 cavity)	Behind LH side of I/P, at shroud	
G200	Behind I/P, left of steering column	201-10-A
S203	I/P harness, behind instrument cluster	201-10-A
S205	I/P harness, behind instrument cluster	201-10-A
S228	I/P harness, above Fuse Block	201-10-A

HATCH RELEASE TEST (TABLE 1)

Measure: VOLTAGE
At: RELEASE SOLENOID CONNECTOR (Disconnected)
Condition:
• Parking Brake: APPLIED

Measure Between	Correct Voltage	For Diagnosis
BLK & Ground	0 Volts	See 1

- Hatch Release button pressed

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BLK & Ground	Battery	See 1

- If both voltages are correct, repair/replace Hatch Release Solenoid.

1. Reconnect Solenoid and go to Table 2.

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HATCH RELEASE

(Continued from previous page)

HATCH RELEASE TEST (TABLE 2)

Measure: VOLTAGE At: HATCH RELEASE SWITCH CONNECTOR (Connected)		
Measure Between	**Correct Voltage**	**For Diagnosis**
B (ORN) & Ground	Battery	See 1
• Release Switch Depressed		
P (BLK/WHT) & Ground	Battery	See 2
• If both voltages are correct, go to Table 3. 1. Check/Repair ORN (40) wire. 2. Replace the Hatch Release Switch.		

HATCH RELEASE TEST (TABLE 3)

Measure: VOLTAGE At: RELEASE RELAY CONNECTOR (Disconnected) Conditions: • Release Switch: DEPRESSED (hold) • Parking Brake: APPLIED • Ignition Switch: LOCK		
Measure Between	**Correct Voltage**	**For Diagnosis**
B (BLK/WHT) & Ground	Battery	See 1
B (BLK/WHT) & A (TAN/WHT)	Battery	See 2
• Parking Brake: RELEASED • Ignition Switch: OFF		

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B (BLK/WHT) & A (TAN/WHT)	Battery	See 3
• If all voltages are correct, go to Table 4. 1. Check/repair BLK/WHT (40) wire. 2. Check/repair TAN/WHT (33) wire and Parking Brake Switch (see schematic). 3. Check/repair TAN/WHT (33) wire and Ignition Switch (see schematic).		

HATCH RELEASE TEST (TABLE 4)

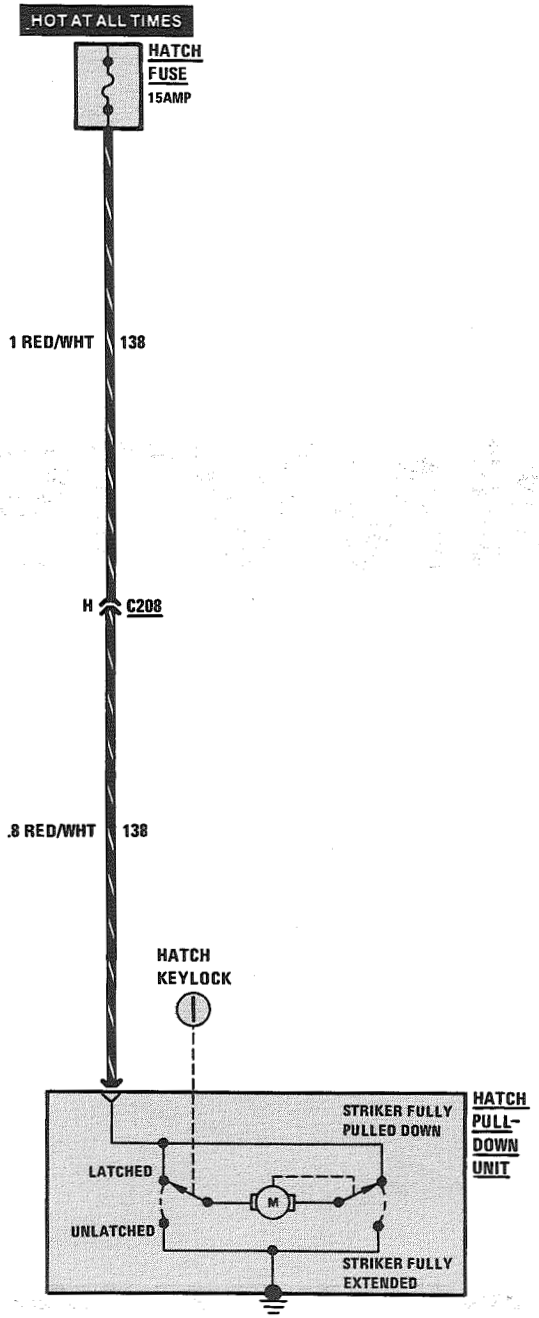
Connect: FUSED JUMPER At: RELEASE RELAY (Disconnected) Condition: • Hatch Release Switch: DEPRESSED		
Jumper Between	**Correct Result**	**For Diagnosis**
B (BLK/WHT) & C (BLK)	Hatch opens	See 1
• If the result is correct, replace the Hatch Release Relay. 1. Check/repair BLK (142) wire.		

CIRCUIT OPERATION

Voltage is applied at all times through the CTSY Fuse to the Release Switch. With the Parking Brake applied, or with the Ignition Switch in OFF, depressing the Release Switch will cause current to flow through the Release Relay coil. The relay operates and voltage is applied to the Release Solenoid. The Solenoid operates and the Hatch opens.

BLANK

HATCH PULL-DOWN



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check that connector on Hatch Pull-Down Unit is firmly seated.
2. Check Hatch Fuse by visual inspection.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**
- **Refer to System Diagnosis for diagnostic steps.**

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
Open the Hatch with the vehicle key and raise the lid	Striker rises to maximum height
Lower the Hatch slowly until lock hook on Hatch latches the striker	Striker retracts pulling Hatch closed Caution: to avoid injury keep fingers and clothing away from edge of Hatch while it is closing

COMPONENT LOCATION

		Page-Figure
Hatch Fuse	Attached to side of Fuse Block	
Hatch Pull-Down Unit	Center of end panel, in cargo compartment	201-17-B
C208 (8 cavities)	Behind LH side of rear seat	201-17-C

SYSTEM DIAGNOSIS

- **Do the test below if the Hatch Pull-Down Unit does not operate**

Measure: VOLTAGE
At: HATCH PULL-DOWN UNIT (Connected)
Condition:
- **Hatch: OPEN**

Measure Between	Correct Voltage	For Diagnosis
RED/WHT & Ground	Battery	See 1

- If voltages are correct but Hatch Pull-Down Unit does not operate, replace Pull-Down Unit. (See Body Section 7 for disassembly procedures).

1. Check RED/WHT (138) wire and Hatch Fuse for an open.

CIRCUIT OPERATION

Opening

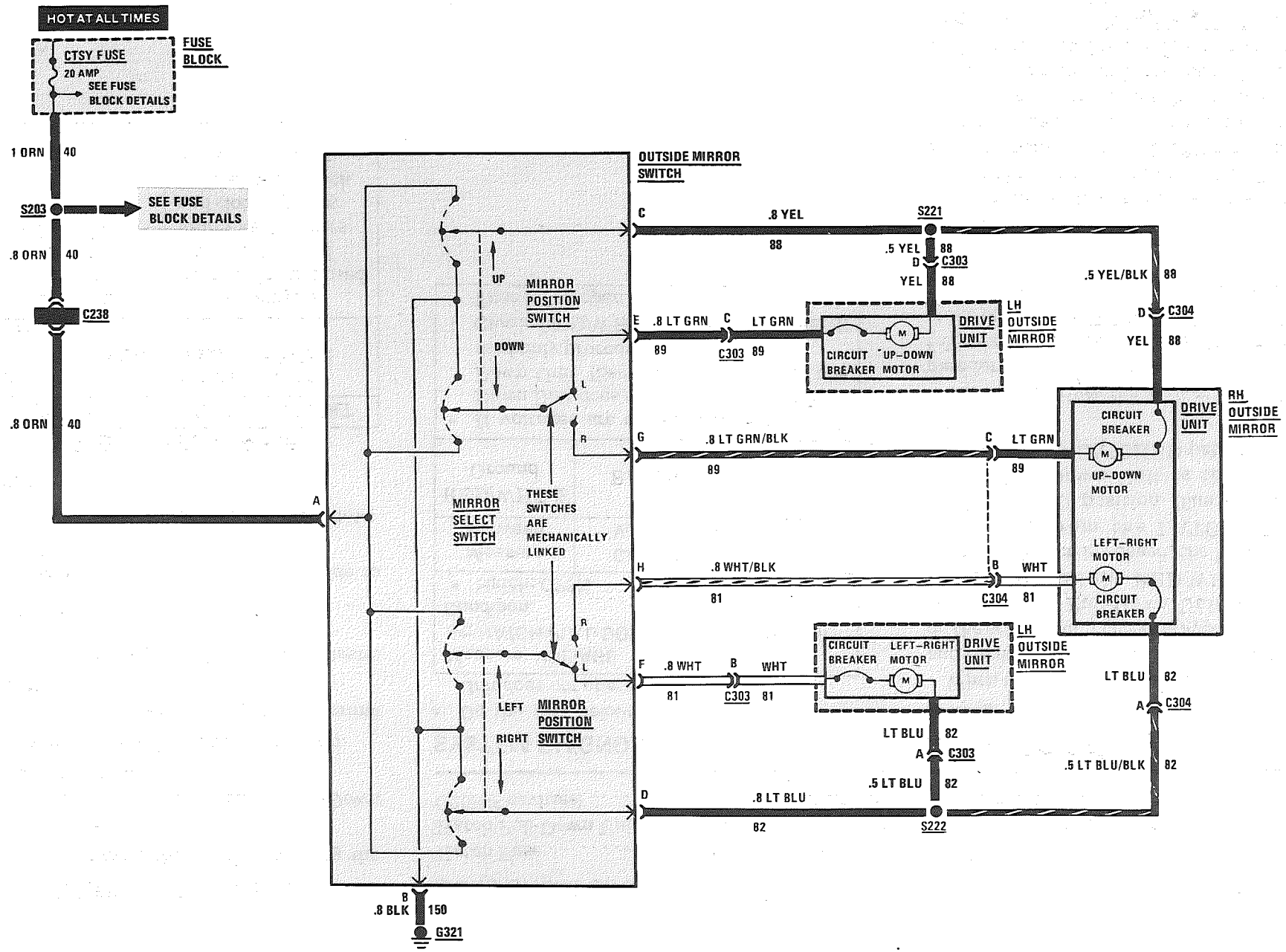
When the Hatch is closed, the Latch contacts and Striker contacts are in the position shown on the schematic. Voltage is applied at all times to the Hatch Pull-Down Unit through the Hatch Fuse and the RED/WHT (138) wire. When the Hatch is opened, the Latch contacts are moved from the LATCHED to the UNLATCHED position. The motor in the Hatch Pull-Down Unit is then grounded through the UNLATCHED path of the Latch contacts.

The motor drives the Striker upward to prepare for closing. When the Striker reaches the fully extended position, the Striker contacts move to the STRIKER FULLY EXTENDED position removing battery voltage from the motor.

Closing

When the Hatch is lowered, the lock hook latches the Striker, moving the Pull-Down Unit Latch contacts to the LATCHED position. Voltage is then applied to the motor in the reverse direction. The motor moves the Striker down, pulling the Hatch closed. Once the Hatch is closed, the Pull-Down Unit Striker contacts move to the STRIKER FULLY PULLED DOWN position removing the ground from the motor.

POWER MIRRORS



TROUBLESHOOTING HINTS

- Try the following check before doing the System Check.

  Check the CTSY Fuse by checking for operation of the LH courtesy light.
- Go to System Check for a guide to normal operation.
- Go to System Diagnosis for diagnostic tests.

SYSTEM CHECK

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

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
Put the mirror Select Switch in the L position, operate the Mirror Control Switch in the UP and DOWN position	LH Outside Mirror moves smoothly upward and downward
Operate the Mirror Position Switch in the left and right positions	LH Outside Mirror moves smoothly to the left and right

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COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
C238 (12 cavities)	LH shroud, ahead of center access hole	201-11-C
C303 (4 cavities)	LH shroud, near center access hole	
C304 (4 cavities)	RH shroud, near center access hole	
G321	In center console, below switches	
S203	I/P harness, behind instrument cluster	201-10-A
S221	Mirror harness, LH shroud at center access hole	
S222	Mirror harness, LH shroud at center access hole	

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Put the Mirror Select Switch in the R position and operate the Mirror Control Switch in the UP and DOWN positions	RH Outside Mirror moves smoothly upward and downward
Operate the Mirror Position Switch in the LEFT and RIGHT positions	RH Outside Mirror moves smoothly to the left and right

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

SYSTEM DIAGNOSIS

- Diagnostic steps for the symptoms listed in the following table are listed after the table.

SYMPTOM TABLE

A: Both mirrors do not operate in any mode

B: LH mirror does not operate in one or more mode

C: RH mirror does not operate in one or more mode

A: BOTH MIRRORS DO NOT OPERATE IN ANY MODE

Measure: VOLTAGE At: OUTSIDE MIRROR SWITCH CONNECTOR (Disconnected)		
Measure Between	**Correct Voltage**	**For Diagnosis**
A (ORN) & Ground	Battery	See 1

(A: BOTH MIRRORS DO NOT OPERATE IN ANY MODE continued on next page)

(A: BOTH MIRRORS DO NOT OPERATE IN ANY MODE continued from previous page)

A (ORN) & B (BLK)	Battery	See 2
• If both voltages are correct, replace the Outside Mirror Switch.		
1. Check ORN (40) wire.		
2. Check BLK (150) wire		

B: LH MIRROR DOES NOT OPERATE IN ONE OR MORE MODE

Measure: VOLTAGE
At: OUTSIDE MIRROR SWTICH CONNECTOR (Connected)
Conditions:
- **Mirror Select Switch: L**
- **Hold Mirror Position Switch in UP or DOWN position**

Measure Between	Correct Voltage	For Diagnosis
C (YEL) & E (LT GRN)	Battery	See 1
• Hold Mirror Position Switch in the Left or Right position.		
D (LT BLU) & F (WHT)	Battery	See 1
• If both voltages are correct, replace the LH Outside Mirror Drive Unit, after checking connector C303, the YEL (88), LT GRN (89), LT BLU (82) and WHT (81) wires.		
1. Replace Outside Mirror Switch.		

C: RH MIRROR DOES NOT OPERATE IN ONE OR MORE MODE

Measure: VOLTAGE
At: OUTSIDE MIRROR SWITCH CONNECTOR (Connected)
Conditions:
- **Mirror Select Switch: R**
- **Hold Mirror Position Switch in UP or DOWN position**

Measure Between	Correct Voltage	For Diagnosis
C (YEL) & G (LT GRN/ BLK)	Battery	See 1
• Hold Mirror Position Switch in the Left or Right position.		
H (WHT/ BLK) & D (LT BLU)	Battery	See 1
• If both voltages are correct, replace the RH Outside Mirror Drive Unit, after checking connector C304 and the YEL (88), LT GRN/BLK (89), and LT BLU (82) wires.		
1. Replace Outside Mirror Switch.		

CIRCUIT OPERATION

Each Outside Mirror has two reversible Motors: one to adjust the mirror view up and down, the other to adjust the mirror view Right and Left. The driver operates four Switches that control the polarity of the voltage to the Motors. The Mirror Select Switch directs these control voltages to either the RH or LH Outside Mirror.

With the Switches in the positions shown in the schematic, the LH Outside Mirror is moved. When the Mirror Position Switch is moved to the UP position, battery voltage from the ORN wire is applied to the YEL or YEL/BLK wire and the Up-Down Motor in each Outside Mirror. The LH Outside Mirror Up-Down Motor, has a path to ground through the LT GRN wire, the Up contacts of the Mirror Position Switch, and the BLK wire. The LH Up-Down Motor runs and turns the mirror up.

If the Mirror Switch Position is pushed to the DOWN position, the same Motor receives voltage. Now the polarity is reversed, with the YEL or YEL/BLK wires grounded. The Motor runs in the opposite direction.

The RH Left-Right Motor operates in a similar manner when the Mirror Position Switch is moved to the LEFT position. The WHT wire gets battery voltage and the LT BLU wire is grounded through the Mirror Position Switch. If the Mirror Position Switch is pushed to the RIGHT position, the polarity is reversed and the motor will run in the opposite direction.

The RH Outside Mirror works in the same way as the LH Outside Mirror when the Mirror Select Switch is moved to the R position and the Mirror Position Switch is operated.

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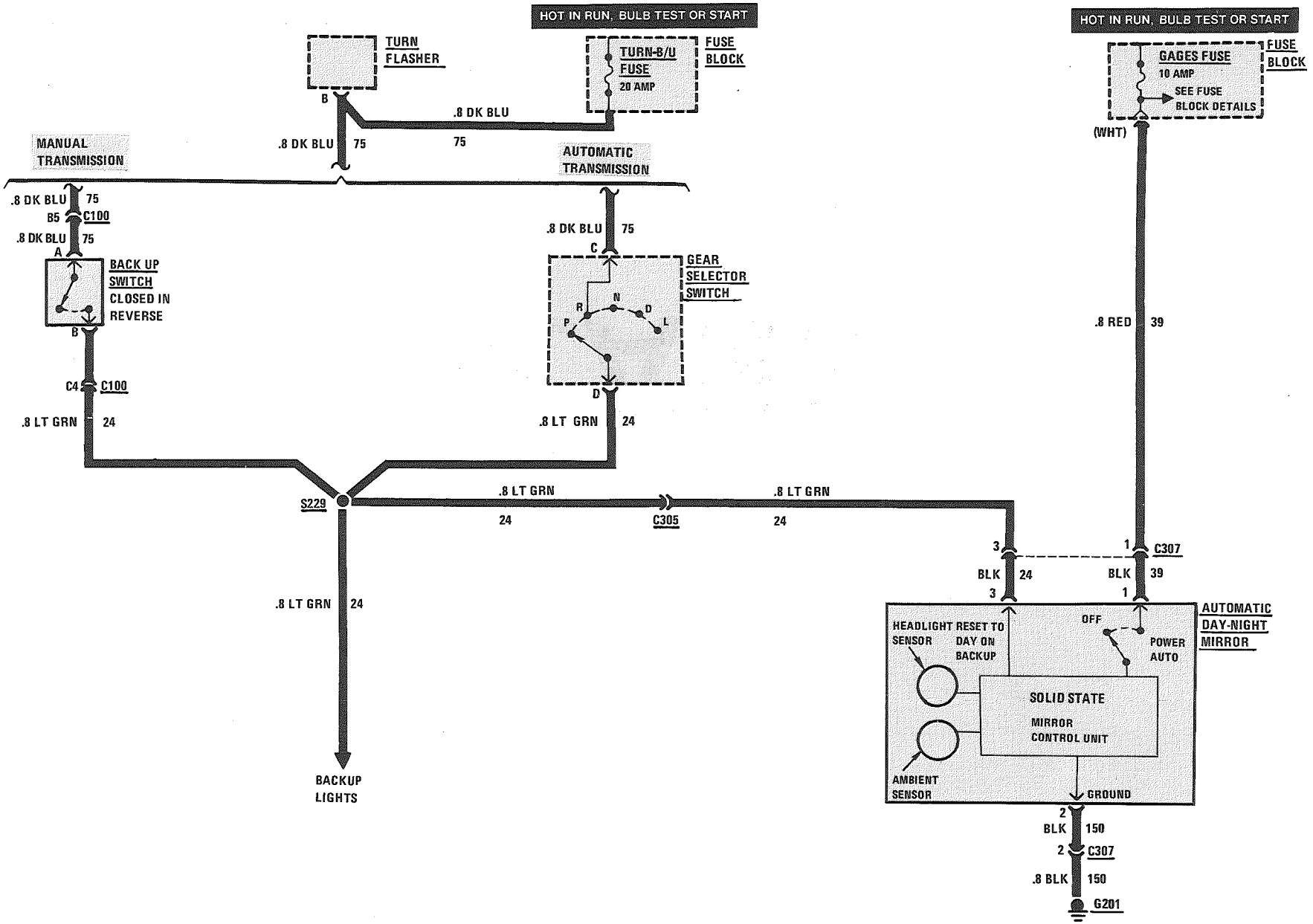
AUTOMATIC DAY-NIGHT MIRROR



AUTOMATIC DAY-NIGHT MIRROR

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check TURN B/U Fuse and the Gear Selector Switch (Automatic Transmission) or Back Up Switch (Manual Transmission) by checking operation of the Back Up Lights.
2. Check GAGES Fuse by observing the BRAKE Indicator with the Park Brake applied and Ignition Switch in RUN.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
With Ignition Switch in RUN, cover the front side of the mirror with cardboard Put the Automatic Day-Night Switch in AUTO Shine a light on the mirror	Mirror will shift to the low reflectance (nighttime) position
Turn off light	Mirror will shift to the high reflectance (daytime) position
Shine light on mirror	Mirror will shift to the low reflectance (nighttime) position
Put Gear Selector in R (Reverse) position Keep light shining on mirror	Mirror will shift to the high reflectance (daytime) position
Put Gear Selector in P (Park) position Keep light shining on mirror	Mirror will shift to the low reflectance (nighttime) position
Put Automatic Day-Night Mirror switch in the OFF position	Mirror will shift to the high reflectance (daytime) position

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

COMPONENT LOCATION

		Page-Figure
Back Up Switch	On LH side of transmission	201- 8-F
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Gear Selector Switch	In console, at base of gear selector	201-11-E
Turn Flasher	Behind I/P, to right of steering column	201- 9-A
C100 (42 cavities)	LH front of dash, left of brake master cylinder	201- 0-A
C305 (1 cavity)	Under LH side of I/P	
C307 (3 cavities)	Center of windshield header	
G201	Top center of windshield header	
S229	I/P harness, behind LH side of I/P	201-10-A

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SYSTEM DIAGNOSIS

- **Do the tests below if the Automatic Day-Night Mirror does not operate correctly.**

AUTOMATIC DAY-NIGHT MIRROR VOLTAGE TEST

Measure: VOLTAGE
At: AUTOMATIC DAY-NIGHT MIRROR CONNECTOR (Disconnected)
Conditions:
- **Ignition Switch: RUN**
- **Gear Selector: REVERSE**

Measure Between	Correct Voltage	For Diagnosis
3 (BLK) & Ground	Battery	See 1
• Gear Selector: NEUTRAL		
3 (BLK) & Ground	0 volts	See 2
1 (BLK) & Ground	Battery	See 3
1 (BLK) & 2 (BLK)	Battery	See 4

- If all voltages are correct, replace Automatic Day-Night Mirror.

1. Check BLK and LT GRN (24) wires for an open. If Back Up lights do not operate, check Gear Selector Switch adjustment (automatic) or Back Up Switch adjustment (manual). If adjustment does not correct the problem, refer to 8A-112 for diagnosis.

(Continued from previous column)

2. Check Gear Selector Switch adjustment (automatic) or Back Up Switch adjustment (manual). Replace suspect switch if adjustment does not correct the problem.
3. Check BLK and RED (39) wire for an open.
4. Check BLK (150) wire for an open.

CIRCUIT OPERATION

The Automatic Day-Night Mirror is automatically moved to the DAY and NIGHT positions as light conditions change. The Headlight and Ambient Sensors read the light conditions and feed this information to the solid state mirror control unit. The control unit activates the Motor that drives the mirror.

With the Gear Selector in Reverse, battery voltage is applied through the Gear Selector Switch or Back Up Switch to the reset input of the mirror. If the mirror is in the NIGHT position, it changes to the DAY position. This provides a clear view for backing the car.

A distance or sensitivity control changes the brightness required from the headlights of the car behind to cause the mirror to shift to the NIGHT position.

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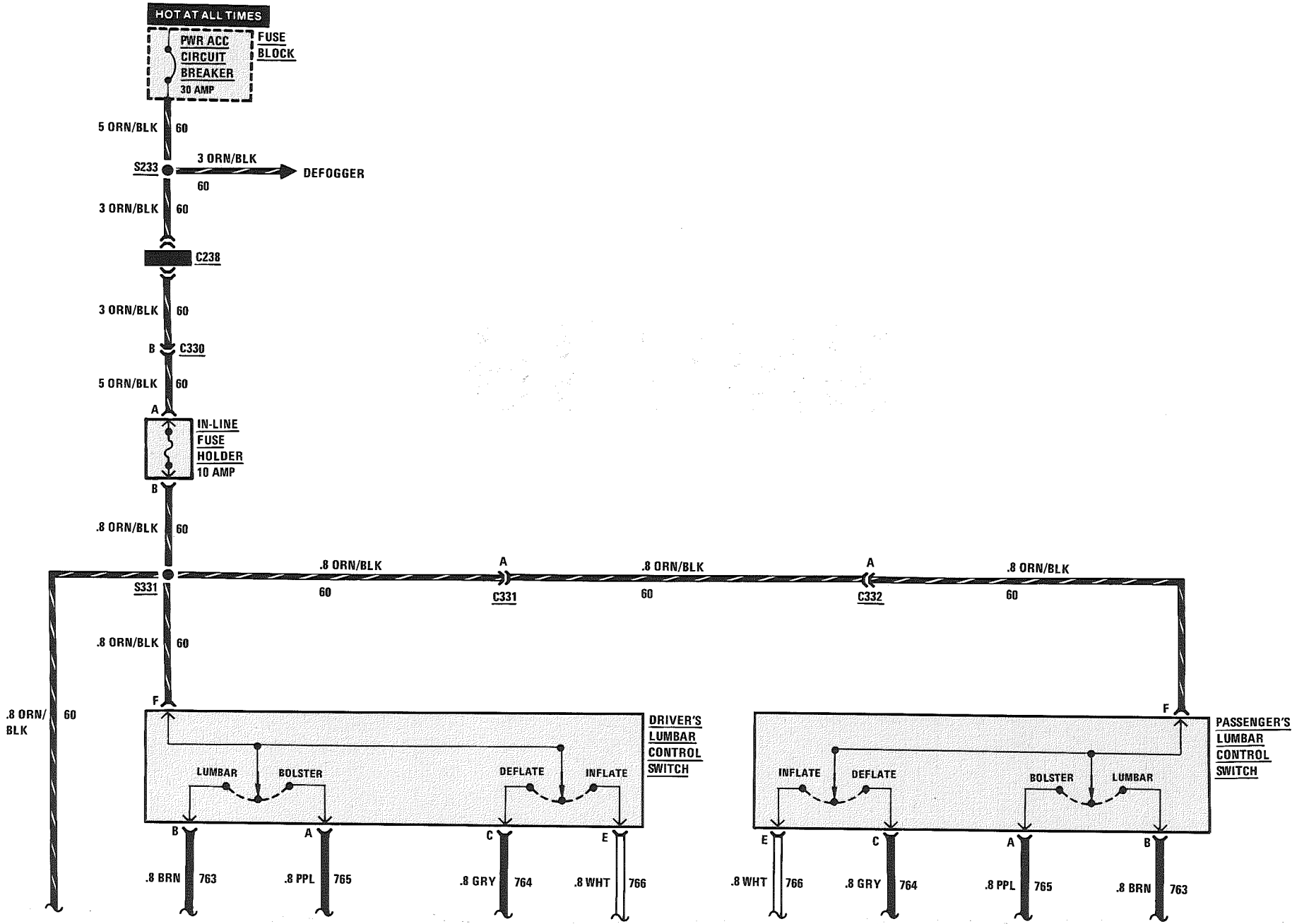
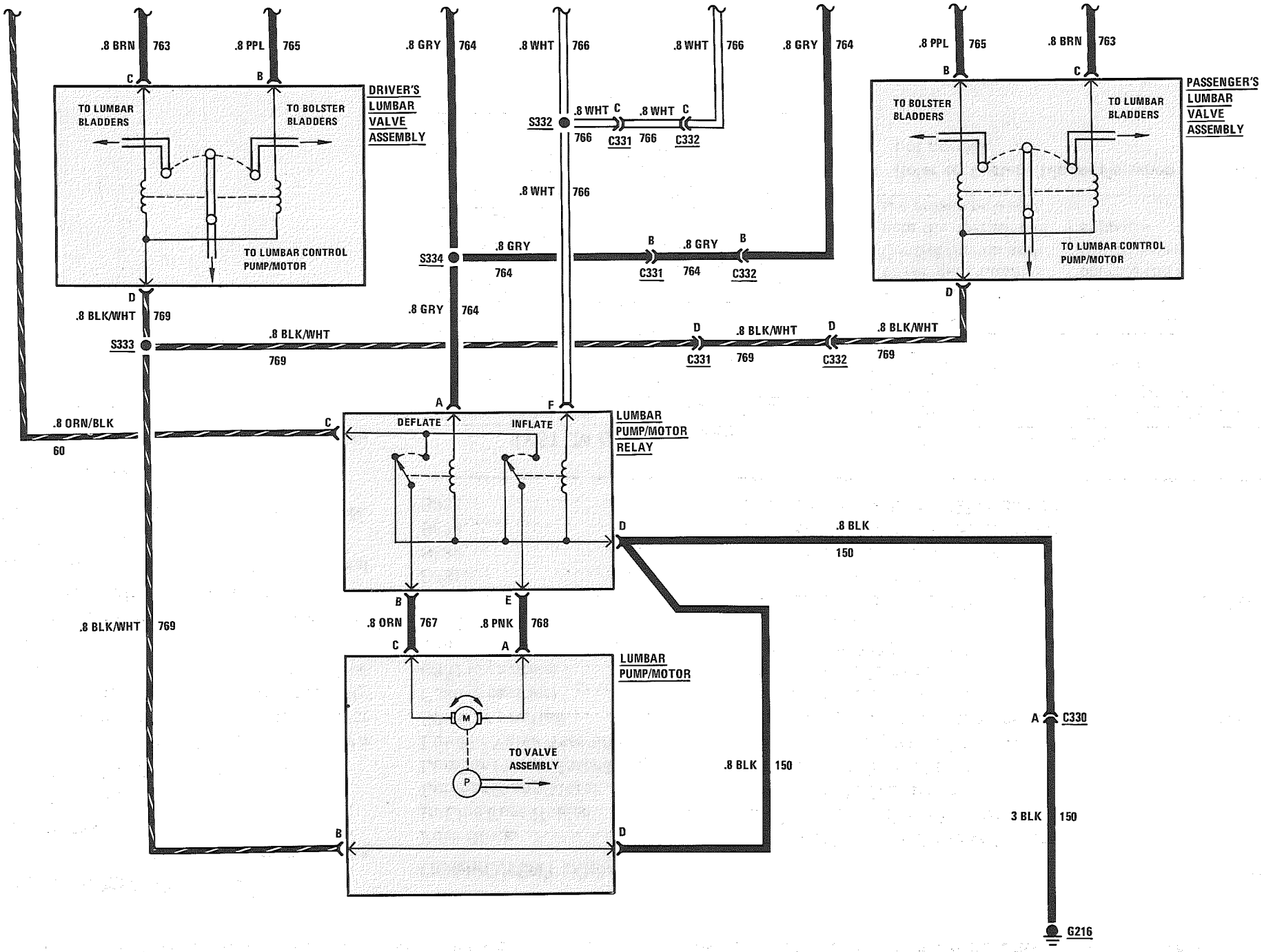
LUMBAR AND BOLSTER SUPPORT




.8 BRN 763
.8 PPL 765
.8 GRY 764
.8 WHT 766
.8 WHT 766
.8 GRY 764
.8 PPL 765
.8 BRN 763
C
B
TO LUMBAR BLADDERS
TO BOLSTER BLADDERS
DRIVER'S LUMBAR VALVE ASSEMBLY
S332
.8 WHT C
.8 WHT C
766
C331
766
C332
TO BOLSTER BLADDERS
TO LUMBAR BLADDERS
PASSENGER'S LUMBAR VALVE ASSEMBLY
.8 WHT 766
TO LUMBAR CONTROL PUMP/MOTOR
S334
.8 GRY
764
B
.8 GRY
B
C331
764
C332
TO LUMBAR CONTROL PUMP/MOTOR
D
.8 BLK/WHT 769
.8 GRY 764
S333
.8 BLK/WHT
769
D
.8 BLK/WHT
D
.8 BLK/WHT
C331
769
C332
769
A
F
.8 ORN/BLK
60
C
DEFLATE
INFLATE
LUMBAR PUMP/MOTOR RELAY
D
.8 BLK
150
B
E
.8 BLK/WHT 769
.8 ORN 767
.8 PNK 768
C
A
LUMBAR PUMP/MOTOR
M
TO VALVE ASSEMBLY
P
.8 BLK 150
A
C330
3 BLK 150
B
D
G216

LUMBAR AND BOLSTER SUPPORT

TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the In-Line Fuse.
2. Check the PWR ACC Circuit Breaker.
3. If the Lumbar Pump/Motor runs, but both driver's and passenger's Lumbar and Bolster Supports do not operate, check the continuity to ground of BLK/WHT (769) wire (see schematic).
4. Check the hose between the Valve Assemblies and the Pump/Motor for leaks or cracks.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**

COMPONENT LOCATION

		Page-Figure
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
In-Line Fuse Holder	Taped to C331, below LH front seat	
Lumbar Pump/Motor	Underside of LH front side	
Lumbar Pump/Motor Relay	Underside of LH front seat	
Lumbar Valve Assembly	Underside of respective front seat	
C238 (12 cavities)	LH shroud, ahead of center access hole	201-11-C
C330 (2 cavities)	Underside of LH front seat	
C331 (4 cavities)	Underside of LH front seat	
C332 (4 cavities)	Underside of RH front seat	
G216	At LH shroud	
S233	I/P harness, above Fuse Block	201-10-A
S331	Lumbar harness, below LH front seat	
S332	Lumbar harness, below LH front seat	
S333	Lumbar harness, below LH front seat	
S334	Lumbar harness, below LH front seat	

SYSTEM CHECK TABLE

SET CONTROLS	NORMAL OPERATION
Driver's Lumbar Control Switch: BOLSTER and INFLATE	The Bolster Support on the driver's seat inflates
Driver's Lumbar Control Switch: LUMBAR and INFLATE	The Lumbar Support on the driver's seat inflates
Driver's Lumbar Control Switch: BOLSTER and DEFLATE	The Bolster Support on the driver's seat deflates

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Driver's Lumbar Control Switch: LUMBAR and DEFLATE	The Lumbar Support on the driver's seat deflates
Repeat the above settings using the Passenger's Lumbar Control Switch and note the operation of the passenger's seat	The supports in the passenger's seat operate the same as the driver's seat supports

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

LUMBAR AND BOLSTER SUPPORT

SYSTEM DIAGNOSIS

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

SYMPTOM TABLE

SYMPTOM	DO TEST
Neither Lumbar Control causes the supports to inflate or deflate	A: Lumbar Control Pump/Motor Relay Test
Lumbar and/or Bolster Supports do not operate in the driver's seat only	B: Lumbar Control Switch Test
Lumbar and/or Bolster Supports do not operate in the passenger's seat only	B: Lumbar Control Switch Test

A: LUMBAR CONTROL PUMP/MOTOR RELAY TEST (TABLE 1)

Measure: VOLTAGE
At: LUMBAR PUMP/MOTOR RELAY CONNECTOR (Disconnected)
Condition:
- **Driver's Lumbar Control Switch: DEFLATE**

Measure Between	Correct Voltage	For Diagnosis
C (ORN/BLK) & Ground	Battery	See 1
C (ORN/BLK) & D (BLK)	Battery	See 2
A (GRY) &Ground	Battery	See 3
• Driver's Lumbar Control Switch: INFLATE		
F (WHT) & Ground	Battery	See 4

- If voltages are correct, go to Table 2.

1. Check ORN/BLK (60) wire for an open (see schematic).
2. Check BLK (150) wire for an open (see schematic).
3. Check GRY (764) wire for an open (see schematic).
4. Check WHT (766) wire for an open (see schematic).

A: LUMBAR CONTROL PUMP/MOTOR RELAY TEST (TABLE 2)

Connect: FUSED JUMPER
At: LUMBAR PUMP/MOTOR RELAY CONNECTOR (Disconnected)
Condition:
- **Driver's Lumbar Control Switch: LUMBAR**

Jumper Between	Correct Result	For Diagnosis
C (ORN/BLK)& E (PNK) and B (ORN) & D (BLK)	Driver's Lumbar Support inflates	See 1
C (ORN/BLK) & B (ORN) and E (PNK) & D (BLK)	Driver's Lumbar Support deflates	See 1

- If results are correct, replace the Lumbar Pump/Motor Relay.

1. Check ORN (767) and PNK (768) wires and connectors for continuity. If the connections and wires are good, replace the Lumbar Pump/Motor.

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B: LUMBAR CONTROL SWITCH TEST

Measure: VOLTAGE
At: DRIVER'S OR PASSENGER'S LUMBAR CONTROL SWITCH (Connected)
Condition:
- **Lumbar Control Switch: LUMBAR & INFLATE**

Measure Between	Correct Voltage	For Diagnosis
F (ORN/BLK) & Ground	Battery	See 1
B (BRN) & Ground	Battery	See 2
E (WHT) & Ground	Battery	See 2
• Lumbar Control Switch: BOLSTER & DEFLATE		
A (PPL) & Ground	Battery	See 2
C (GRY) & Ground	Battery	See 2

- If voltages are correct, do Test C.

1. Check In-Line Fuse and ORN/BLK (60) wire for an open.
2. Check In-Line Fuse. If blown, check attached wire for a short to ground. Otherwise, replace Lumbar Control Switch.

C: LUMBAR VALVE ASSEMBLY TEST

Measure: VOLTAGE
At: DRIVER'S OR PASSENGER'S LUMBAR VALVE ASSEMBLY CONNECTOR (Disconnected)
Condition:
- **Lumbar Control Switch: LUMBAR**

Measure Between	Correct Voltage	For Diagnosis
C (BRN) & Ground	Battery	See 1
C (BRN) & D (BRN/WHT)	Battery	See 2
• Lumbar Control Switch: BOLSTER		
B (PPL) & Ground	Battery	See 3

- If voltages are correct, replace the suspect Lumbar Valve Assembly.

1. Check BRN (763) wire for an open.
2. Check BLK/WHT (769) wire for continuity to ground.
3. Check PPL (765) wire for an open.

CIRCUIT OPERATION

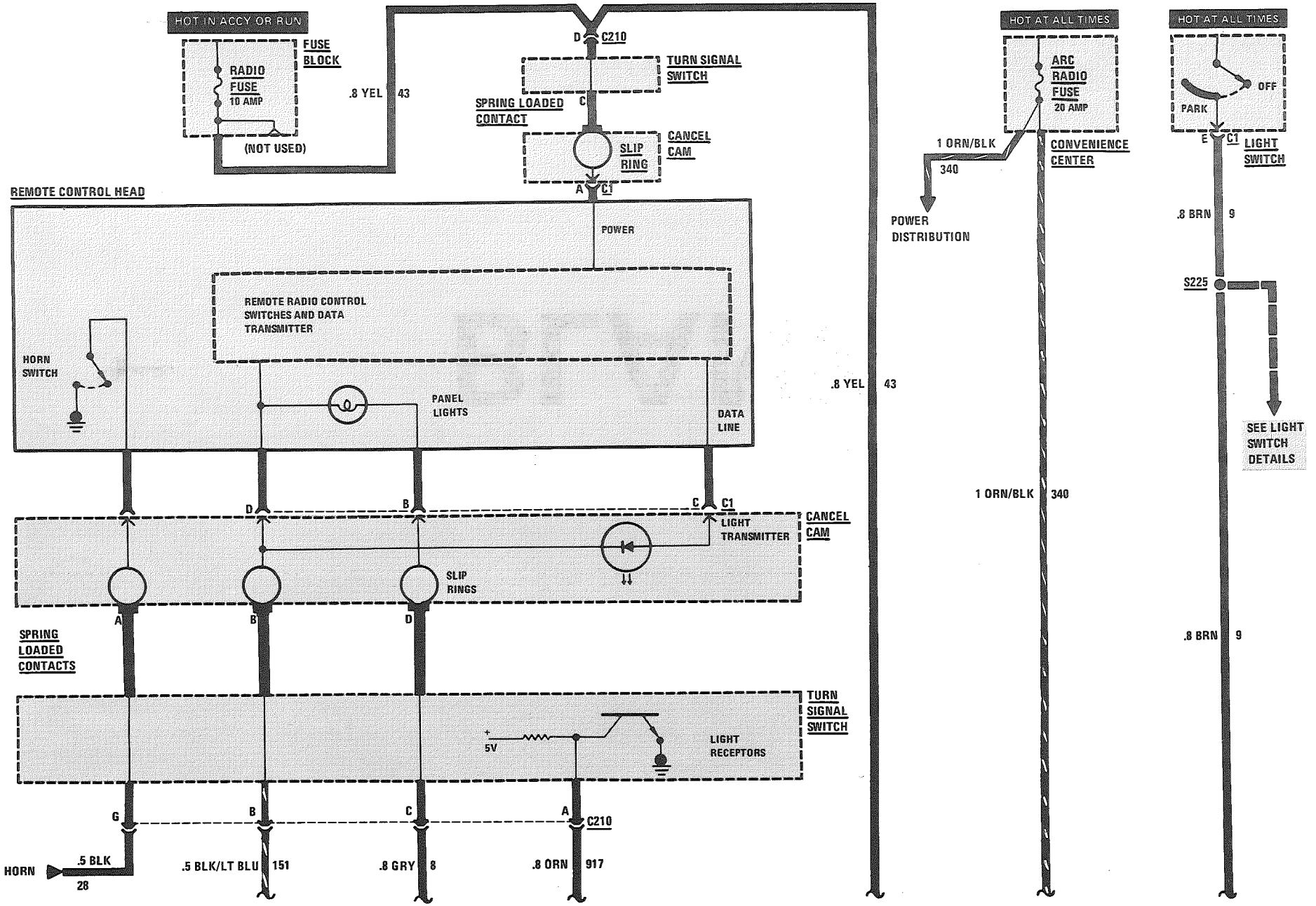
Voltage is applied at all times through the PWR ACC Circuit Breaker. When the Lumbar Control Switch is moved to LUMBAR and INFLATE, the Lumbar Pump/Motor starts to operate to pump up the Lumbar Support. When the Lumbar Control Switch is moved to DEFLATE, the Lumbar Pump Motor reverses to pull the air from the Lumbar Support.

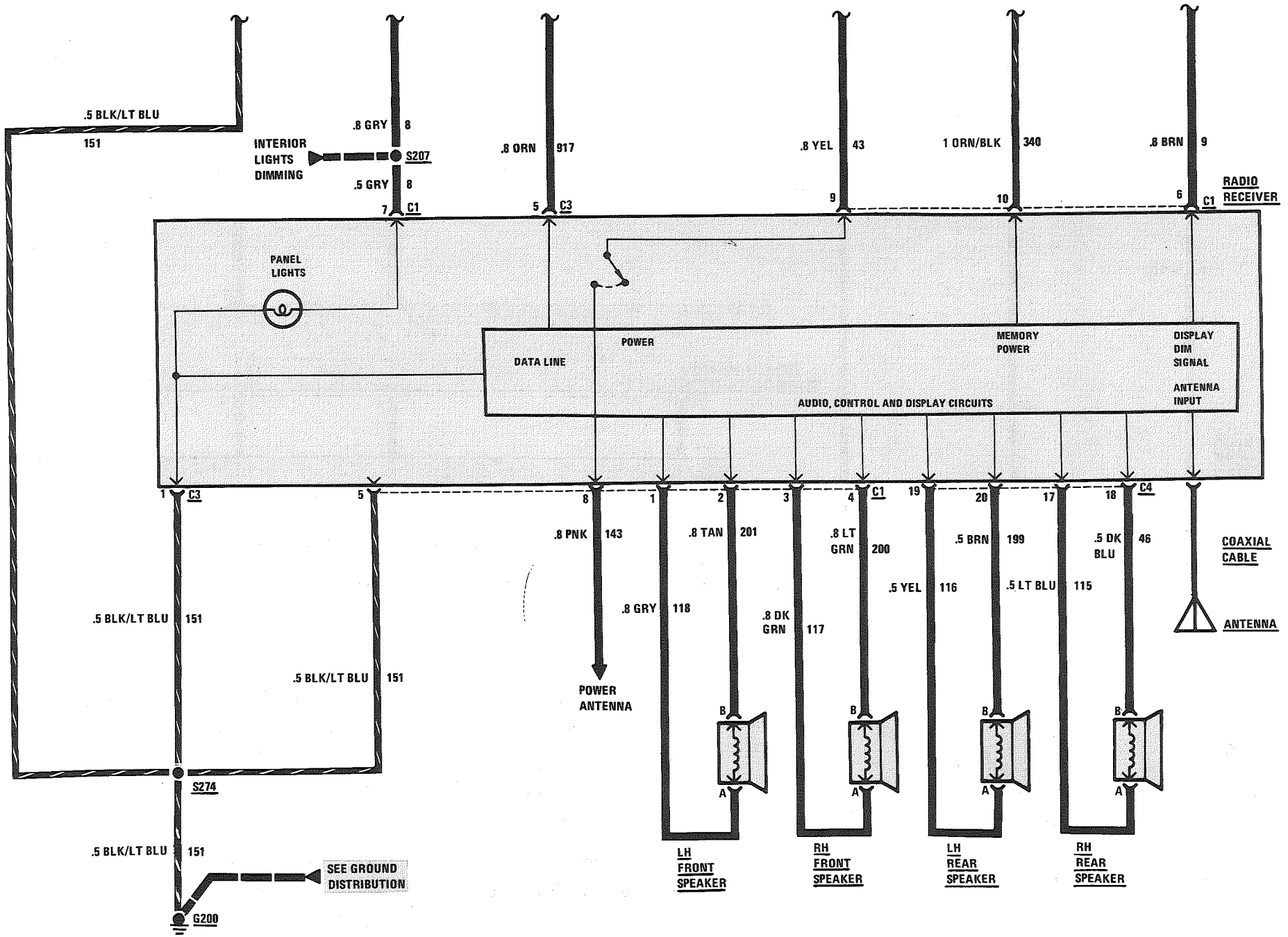
Bolster Support operates in the same manner.

BLANK

RADIO

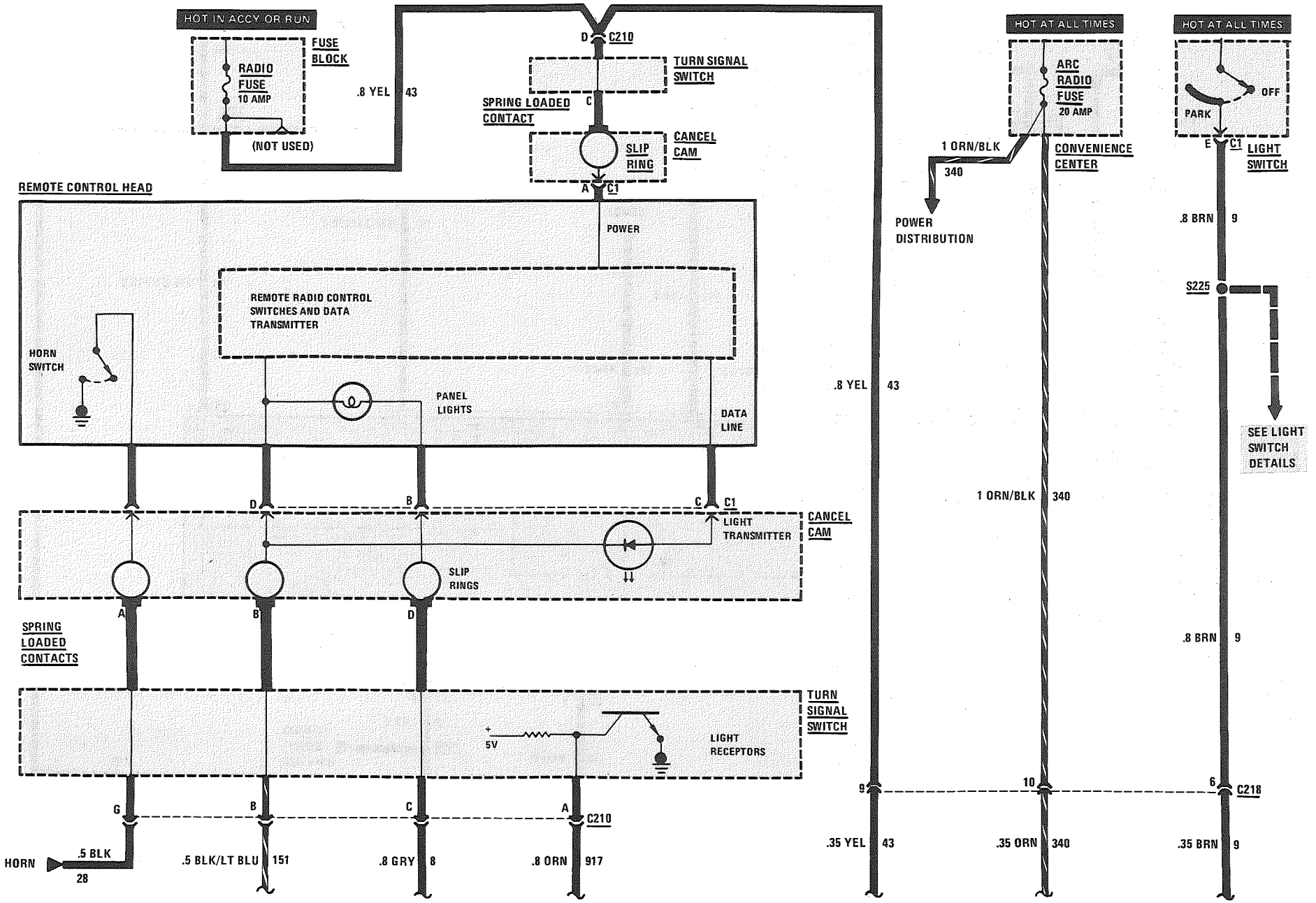
WITH UK3

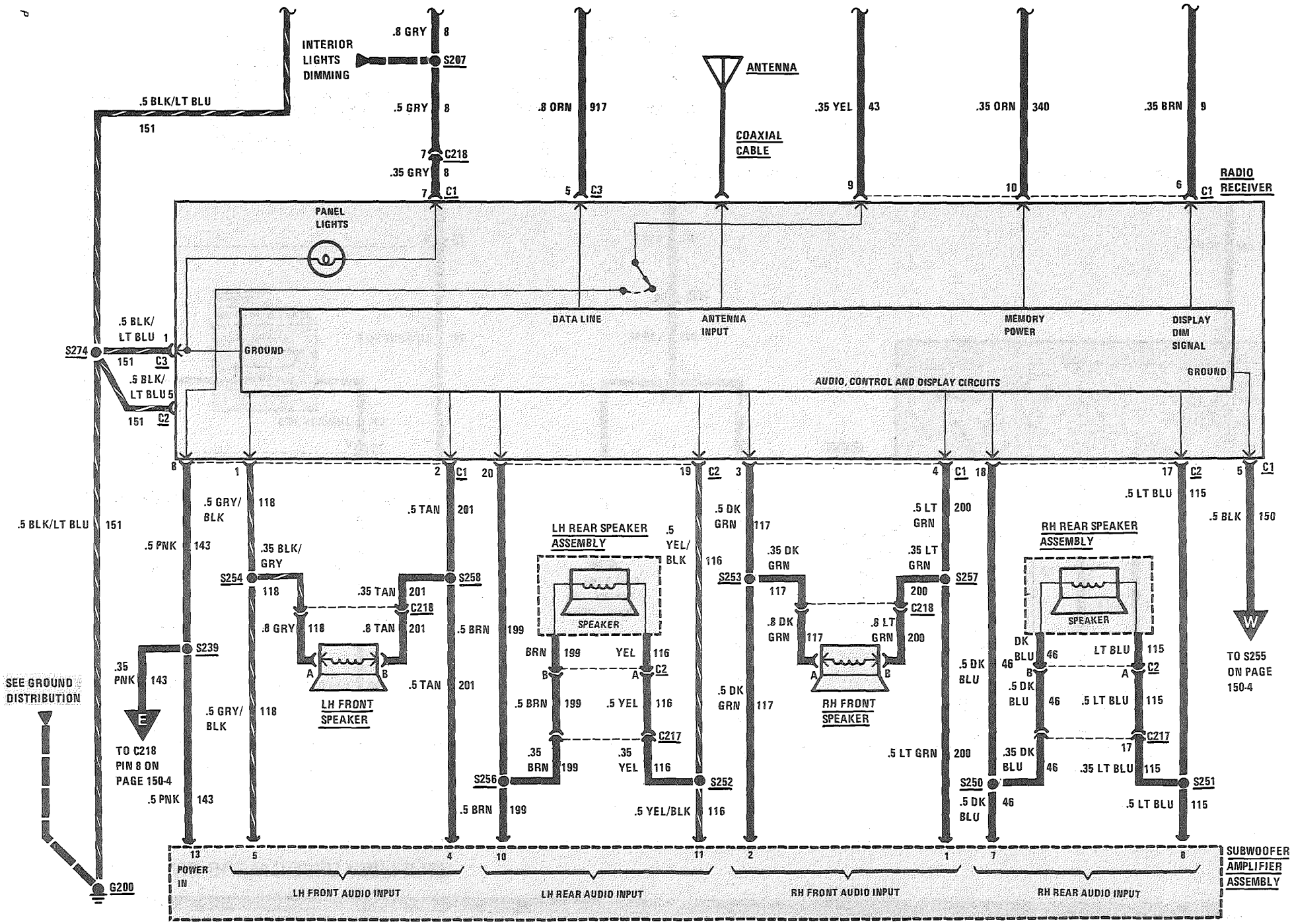



.5 BLK/LT BLU
151
.8 GRY
8
INTERIOR
LIGHTS
DIMMING
S207
.5 GRY
8
7
C1
.8 ORN
917
5
C3
.8 YEL
43
9
1 ORN/BLK
340
10
.8 BRN
9
6
C1
RADIO
RECEIVER
PANEL
LIGHTS
DATA LINE
POWER
MEMORY
POWER
DISPLAY
DIM
SIGNAL
ANTENNA
INPUT
AUDIO, CONTROL AND DISPLAY CIRCUITS
1
C3
5
8
1
2
3
4
C1
19
20
17
18
C4
.8 PNK
143
.8 TAN
201
.8 LT
GRN
200
.5 BRN
199
.5 DK
BLU
46
COAXIAL
CABLE
.5 YEL
116
.5 LT BLU
115
.8 GRY
118
.8 DK
GRN
117
ANTENNA
.5 BLK/LT BLU
151
.5 BLK/LT BLU
151
POWER
ANTENNA
B
A
S274
.5 BLK/LT BLU
151
SEE GROUND
DISTRIBUTION
G200
LH
FRONT
SPEAKER
RH
FRONT
SPEAKER
LH
REAR
SPEAKER
RH
REAR
SPEAKER

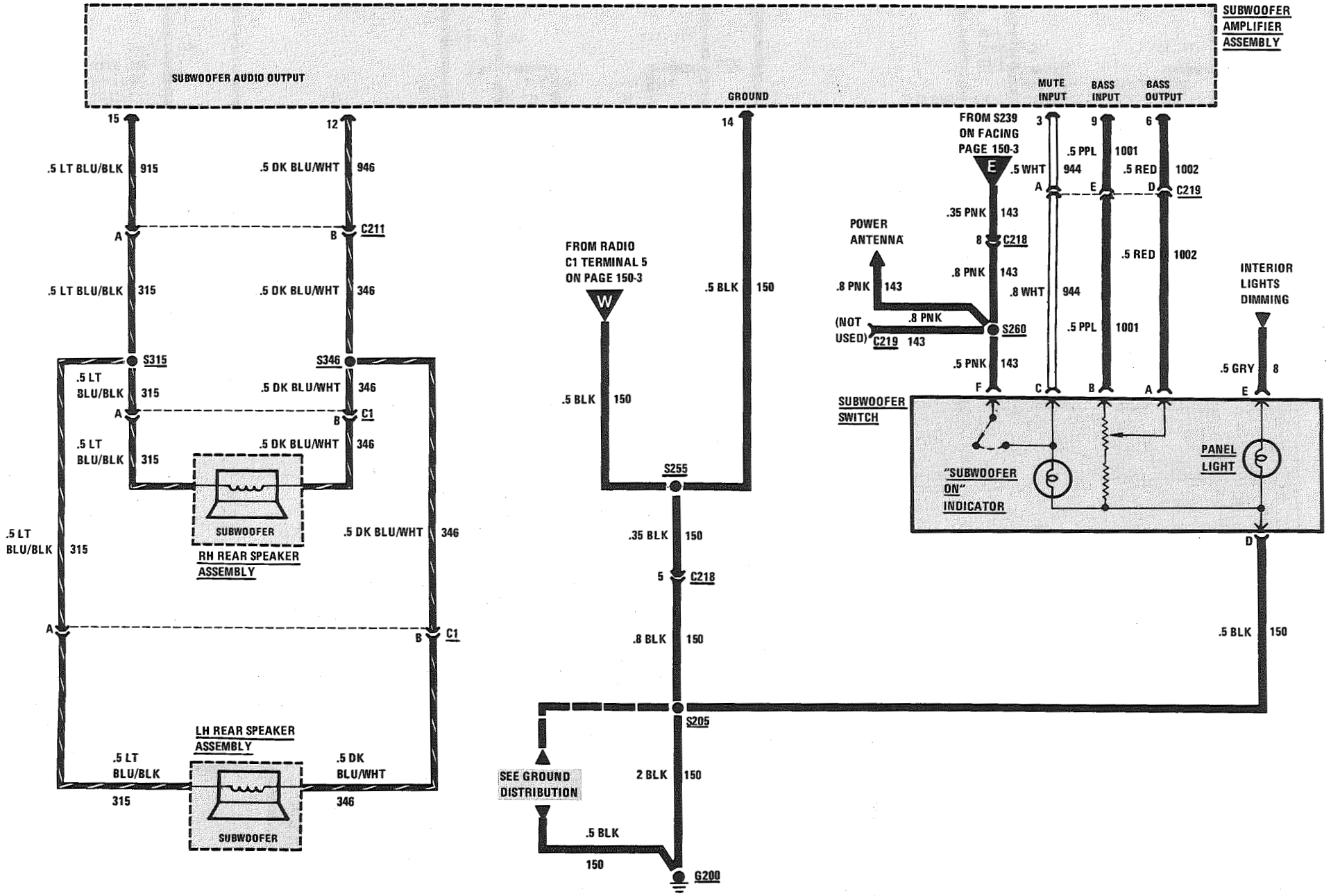
RADIO

WITH UK3 AND SUBWOOFER AMPLIFIER



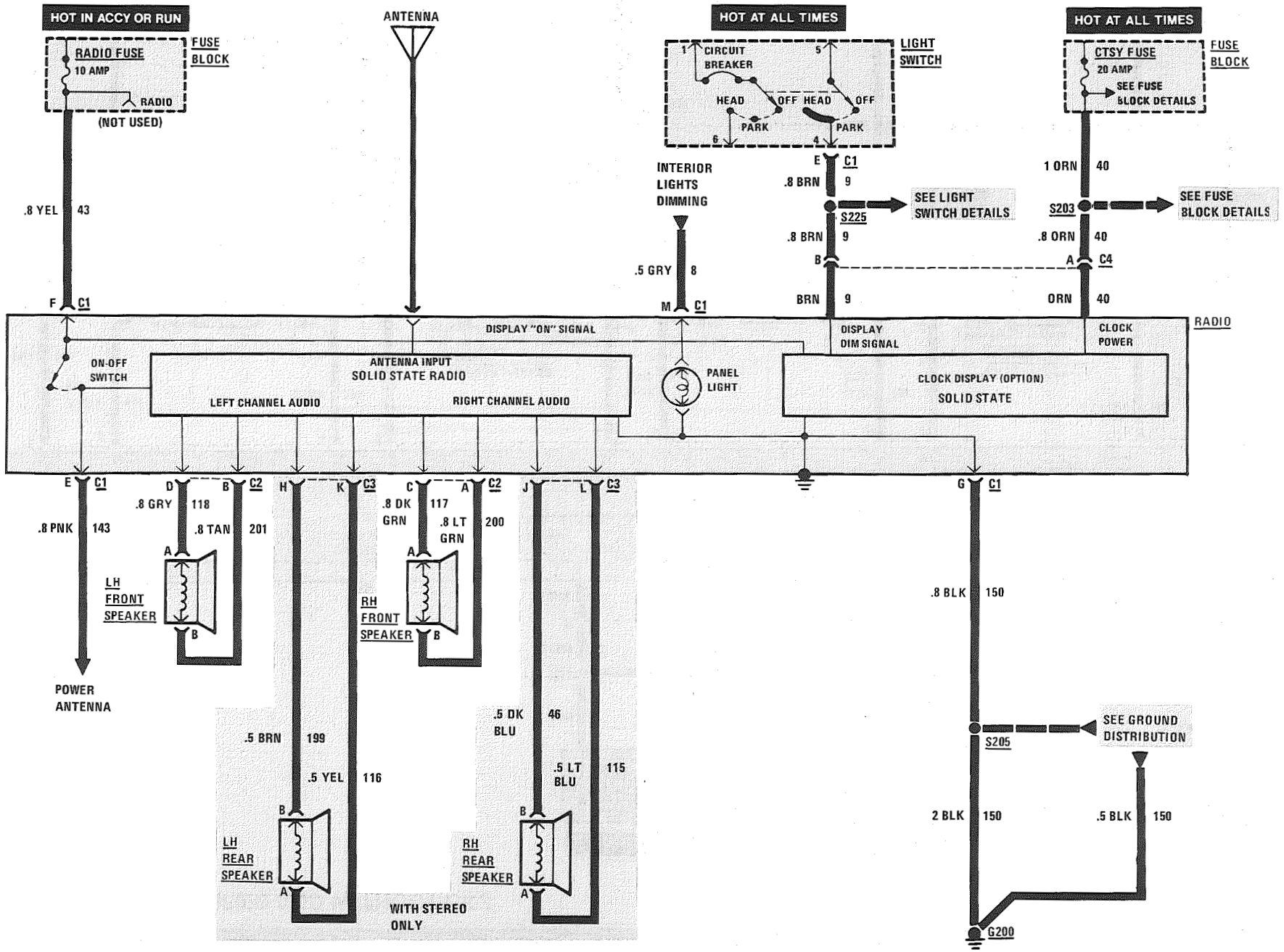

INTERIOR LIGHTS DIMMING
.8 GRY 8
S207
.5 GRY 8
7 C218
.35 GRY 8
7 C1
.5 BLK/LT BLU
151
.8 ORN 917
5 C3
ANTENNA
COAXIAL CABLE
.35 YEL 43
9
.35 ORN 340
10
.35 BRN 9
6 C1
RADIO RECEIVER
PANEL LIGHTS
DATA LINE
ANTENNA INPUT
MEMORY POWER
DISPLAY DIM SIGNAL
GROUND
AUDIO, CONTROL AND DISPLAY CIRCUITS
S274
.5 BLK/LT BLU 1
151 C3
.5 BLK/LT BLU 5
151 C2
8
1
.5 GRY/BLK 118
.5 PNK 143
.35 BLK/GRY
S254
118
.35 TAN 201
C218
.8 GRY 118
.8 TAN 201
LH FRONT SPEAKER
.5 TAN 201
2 C1 20
.5 TAN 201
.5 BRN 199
19 C2 3
LH REAR SPEAKER ASSEMBLY
.5 YEL/BLK 116
SPEAKER
BRN 199
YEL 116
C2
.5 BRN 199
.5 YEL 116
C217
.35 BRN 199
.35 YEL 116
S256
.5 BRN 199
S252
.5 YEL/BLK 116
.5 DK GRN 117
.35 DK GRN
S253
117
.8 DK GRN 117
RH FRONT SPEAKER
.5 DK GRN 117
4
.5 LT GRN 200
.35 LT GRN
S257
200
.8 LT GRN 200
C218
.5 DK BLU
.5 LT GRN 200
S250
.5 DK BLU
46
4 C1 18
17 C2 5 C1
.5 LT BLU 115
.5 BLK 150
RH REAR SPEAKER ASSEMBLY
SPEAKER
DK BLU 46
LT BLU 115
C2
.5 DK BLU 46
.5 LT BLU 115
C217
17
.35 DK BLU 46
.35 LT BLU 115
S251
.5 LT BLU 115
TO S255 ON PAGE 150-4
.5 BLK/LT BLU 151
.5 PNK 143
S239
.35 PNK 143
TO C218 PIN 8 ON PAGE 150-4
.5 PNK 143
SEE GROUND DISTRIBUTION
G200
13 POWER IN
5
4
LH FRONT AUDIO INPUT
10
11
LH REAR AUDIO INPUT
2
1
RH FRONT AUDIO INPUT
7
8
RH REAR AUDIO INPUT
SUBWOOFER AMPLIFIER ASSEMBLY

WITH UK3 AND SUBWOOFER AMPLIFIER



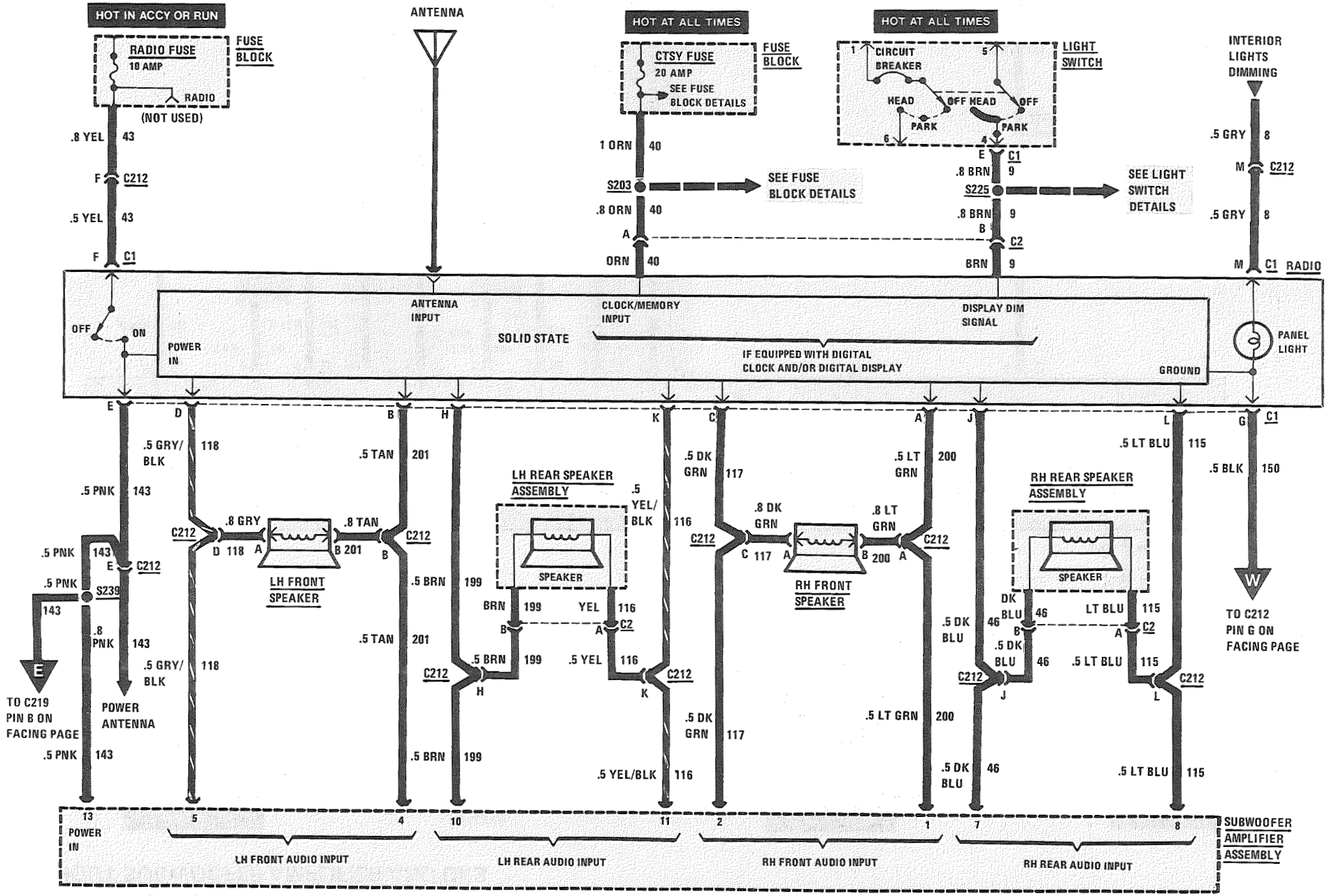
RADIO

WITHOUT SUBWOOFER AMPLIFIER AND UK3

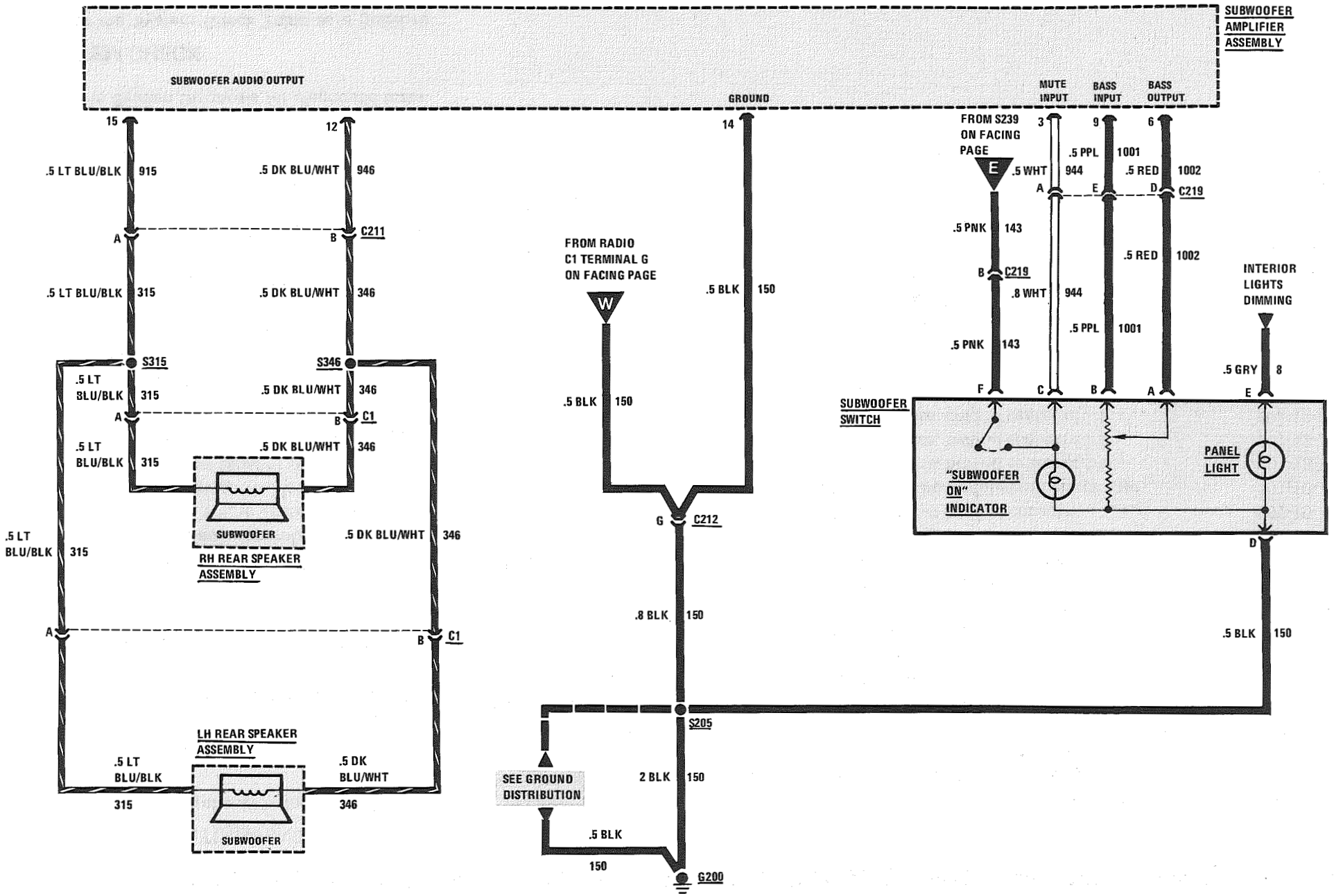


RADIO

WITH SUBWOOFER AMPLIFIER AND WITHOUT UK3



WITH SUBWOOFER AMPLIFIER AND WITHOUT UK3



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check RADIO Fuse.
2. Check CTSY Fuse or check ARC RADIO Fuse (if equipped with Remote Control Head).
3. Check ground G200 by operating the Cigar Lighter.
4. Check that the Antenna connector and coaxial cable are properly connected.
5. Adjusting the Radio controls will change the operation of the sound system. Consult the Delco Sound Service Guide for information regarding the operating of these controls.
6. Before troubleshooting a suspect Speaker, check all connections to that Speaker.
7. For proper noise diagnosis, take the car outside where signals are strong. Close the hood, and keep away from metal buildings or sources of radio interference.
8. Ignition noise on FM may indicate a defective Ignition System.
9. Coasted screws or bolts can cause a poor ground condition. Scrape ground screw clean of any paint or varnish.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**
- **Refer to the diagnosis given if other results occur.**
- **Tests follow in System Diagnosis.**

COMPONENT LOCATION

		Page-Figure
Convenience Center	Behind I/P, to right of steering column	201-10-A
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
Subwoofer Amplifier Assembly	Behind I/P, to right of center air vent	201-13-B
C210 (11 cavities)	Behind I/P, on RH lower side of steering column	201- 9-A
C211 (2 cavities)	Behind center of I/P	
C212 (12 cavities)	Behind center of I/P	201-13-B
C217	Behind center of I/P	
C218	Behind center of I/P	201-12-A
C219 (6 cavities)	Behind RH side of I/P, near Subwoofer Amplifier	201-13-B
G200	Behind I/P, left of steering column	201-10-A
S203	I/P harness, behind instrument cluster	201-10-A
S205	I/P harness, behind instrument cluster	201-10-A
S207	I/P harness, at head of console	201-10-A
S225	I/P harness, behind instrument cluster	201-10-A
S239	Radio harness, behind center of I/P	201-13-B
S250	Radio harness, behind center of I/P	201-12-A
S251	Radio harness, behind center of I/P	201-12-A
S252	Radio harness, behind center of I/P	201-12-A
S253	Radio harness, behind center of I/P	201-12-A
S254	Radio harness, behind center of I/P	201-12-A
S255	Radio harness, behind center of I/P	201-12-A
S256	Radio harness, behind center of I/P	201-12-A
S257	Radio harness, behind center of I/P	201-12-A
S258	Radio harness, behind center of I/P	201-12-A
S260	I/P harness, at head of console	201-10-A
S274	I/P harness, at head of console	201-12-C
S315	Speaker harness, behind RH side of rear seat	201- 9-B
S346	Speaker harness, behind RH side of rear seat	201- 9-B

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT	FOR DIAGNOSIS OF OTHER RESULTS
Turn Ignition Switch to RUN or ACCY	Time display appears	Do Test L, or if equipped with Remote Control do Test A
Turn Radio on and tune in a local station Center Balance and Fade Controls	Power Antenna extends Program is heard from all speakers without noise or engine whine	See Power Antenna (Section 8A-151) If no sound comes from any Speaker, do Test G If one or more Speakers do not operate, do Test D on suspect Speaker(s) If excesssive noise is present, do Test H
Turn on Headlights or Park Lights and set Instrument Panel Lights to maximum brightness	Radio digital display dims Radio Panel Lamp lights Steering wheel Remote Control Head Panel Lamps light (if equipped)	Do test N, or if equipped with Remote Control Head, do test B Do Test M, or if equipped with Remote Control Head, do Test C Check bulbs If all four bulbs are out, do Test E
Turn on Subwoofer	Program is heard from subwoofer speakers	If subwoofer does not operate, do Test I If only one subwoofer speaker does not operate, do Test K If excessive noise is present, do Test H
Turn steering wheel from lock to lock (engine running to assist in steering) (if equipped with Remote Control Head)	Remote Control Head Panel Lamps remain lit with no flickering as wheel is turned	Do Test F
Operate the Tune-Up and Tune-Dn controls on the Remote control Head while turning the steering wheel from lock to lock (if equipped with Remote Control Head)	Radio responds to all controls at all wheel positions	If controls operate at some steering wheel positions, do Test F If controls do not operate at all, do Test E
Operate all Remote Control Head Radio controls (if equipped with Remote Control Head)	Radio responds to all controls All buttons have a similar feel	If inoperative button does not have a feel similar to the others, replace Control Head If all buttons feel the same, but some control functions do not operate, do Test F

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

SYSTEM DIAGNOSIS

- **Do the tests below when directed by the System Check.**

A: RADIO POWER INPUT TEST FOR REMOTE CONTROL HEAD (TABLE 1)

Measure: VOLTAGE
At: RADIO RECEIVER CONNECTOR C1 (Disconnected)

Measure Between	Correct Voltage	For Diagnosis
10 (ORN/BLK) & Ground (Without Subwoofer Amplifier) 10 (ORN) & Ground (With Subwoofer Amplifier)	Battery	See 1

- If the voltage is correct, go to Table 2.

1. Check ORN/BLK (340) or ORN (340)wire for an open.

A: RADIO POWER INPUT TEST FOR REMOTE CONTROL HEAD (TABLE 2)

Measure: VOLTAGE
At: RADIO RECEIVER CONNECTORS C1 & C3 (Disconnected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis
C1/9 (YEL) & Ground	Battery	See 1

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C1/9 (YEL) & C3/1 (BLK/LT BLU)	Battery	See 2
C1/9 (YEL) & C1/5 (BLK/LT BLU) (Without Subwoofer Amplifier) C1/9 (YEL) & C1/5 (BLK) (With Subwoofer Amplifier)	Battery	See 2

- If all voltages are correct, send Radio to an authorized AC-Delco repair station.

1. Check YEL (43) wire.
2. Check BLK/LT BLU (151) or BLK (150) wire for an open to ground (see schematic).

B: DISPLAY DIMMING TEST FOR REMOTE CONTROL HEAD

Measure: VOLTAGE
At: RADIO RECEIVER CONNECTOR C1 (Disconnected)
Condition:
- **Light Switch: HEAD or PARK**

Measure Between	Correct Voltage	For Diagnosis
6 (BRN) & Ground	Battery	See 1

- If the voltage is correct, send Radio to an authorized AC-Delco repair station.

1. Check BRN (9) wire.

C: PANEL LAMPS TEST FOR REMOTE CONTROL HEAD

Measure: VOLTAGE
At: RADIO RECEIVER CONNECTOR C1 (Disconnected)
Conditions:
- **Light Switch: HEAD or PARK**
- **Instrument Panel Lights at maximum brightness**

Measure Between	Correct Voltage	For Diagnosis
7 (GRY) & Ground	Battery	See 1

- If the voltage is correct, send Radio to an authorized AC-Delco repair station.

1. Check GRY (8) wire.

D: SPEAKER TEST

1. Disconnect suspect speaker connector and connect a known good 1.5 volt battery across speaker terminals.

Caution: Do not leave 1.5 volt battery connected for more than one second. Prolonged connection could damage speaker.

- If speaker pops, go to Speaker Test Table.
- If speaker does not pop, replace defective speaker.

D: SPEAKER TEST

Measure: AC VOLTAGE
At: RADIO OUTPUT FOR SUSPECT SPEAKER
Conditions:
- **Ignition Switch: RUN**
- **Radio: ON (High Volume)**

Action	Correct Voltage	For Diagnosis
Connect voltmeter across outputs for suspect Speaker with Radio tuned to a strong signal	Varying around 1 volt AC	See 1

- If the voltage is correct, repair the wires between the Radio and the suspect Speaker.

1. Send Radio to an authorized AC-Delco repair station.

E: REMOTE CONTROL SYSTEM TEST (TABLE 1)

Measure: VOLTAGE
At: CONNECTOR C210 (Connected)
Conditions:
- **Ignition Switch: RUN**
- **Headlights: ON**
- **Instrument Panel at maximum brightness**

Measure Between	Correct Voltage	For Diagnosis
D (YEL) & Ground	Battery	See 1

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D (YEL) & B (BLK/LT BLU)	Battery	See 2
C (GRY) & Ground	Battery	See 3

- If all voltages correct, go to Table 2.

1. Check YEL (43) wire.
2. Check BLK/LT BLU (151) wire for an open to ground (see schematic).
3. Check GRY (8) wire.

E: REMOTE CONTROL SYSTEM TEST (TABLE 2)

Measure: VOLTAGE
At: CONNECTOR C210 (Connected)
Condition:
- **Engine Running**

Measure Between	Correct Voltage	For Diagnosis
A (ORN) & Ground	Between 4.5 and 5.5 volts	See 1

- Press the Preset, Mute, and RCL buttons on the Remote Control Head simultaneously
- Turn the steering wheel slowly while measuring

A (ORN) & Ground	Between 2.0 and 3.0 volts at all positions	See 2

- If all voltages are correct, check ORN (917) wire to the Radio. Send Radio to an authorized AC-Delco repair station if wiring and connections are OK. Refer to Section 9A for removal and replacement procedures.

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1. Inspect/replace the Turn Signal Switch. Refer to Section 3B5 for replacement procedures.
2. Do Test F.

F: OPTICAL SLIPRING TEST (TABLE 1)

- Remove the Remote Control Head. Refer to Section 3B5 for removal procedures.
- Install tool J-353630 between the Control Head and connector C1 (see section 3B5).
- Make the following measurements.

Measure: VOLTAGE
At: TOOL J-35630 (Connected)
Conditions:
- **Engine running**
- **Light Switch: HEAD or PARK**
- **Instrument Panel Lights at maximum brightness**
- **Turn steering wheel slowly while measuring**

Measure Between	Correct Voltage	For Diagnosis
Terminal A & Ground	Battery at all wheel positions	See 1
Terminal A & Terminal D	Battery at all wheel positions	See 1
Terminal B & Terminal D	Battery at all wheel positions	See 1

- If all voltages are correct, go to Table 2.

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1. Remove the Cancel Cam. Inspect the Slip Rings on the Cancel Cam and the spring loaded contacts on the Turn Signal Switch. Replace as necessary. Incorrect or missing lubricant on the Cam can cause premature failure. Take care to keep lubricant or any foreign material away from the LED's and receptors as it will hinder or prevent proper operation. The correct lubricant is part no. 26002312.

F: OPTICAL SLIPRING TEST (TABLE 2)

Measure: VOLTAGE
At: TOOL J-35630 (Connected)
Conditions:
- **Engine running**
- **Press the Preset, Mute and RCL buttons or the Seek, Scan, and AM/FM buttons on the Remote Control Head simultaneoulsy**
- **Turn the steering wheel slowly while measuring**

Measure Between	Correct Voltage	For Diagnosis
Terminal C & Ground	Between 3.0 and 4.5 volts at all wheel positions	See 1

- If the voltage is correct, go to Table 3.

1. Replace the Remote Control Head. Refer to Section 3B5 for replacement procedures.

F: OPTICAL SLIPRING TEST (TABLE 3)

- Remove the Cancel Cam. Refer to Section 3B5 for removal procedures.
- Make the following measurements.

Measure: VOLTAGE
At: CONNECTOR C210 (Connected)
Conditions:
- **Ignition Switch: RUN**
- **Shield the Turn Signal Switch Light Receptors from outside light with a dark cloth**

Measure Between	Correct Voltage	For Diagnosis
A (ORN) & Ground	Between 4.5 and 5.5 volts	See 1
Direct a flashlight beam at the Turn Signal Switch Light Receptors		
A (ORN) & Ground	Battery	See 1

- If voltages are correct, replace the Cancel Cam.

1. Replace the Turn Signal Switch. Refer to Section 3B5 for replacement procedures.

G: ANTENNA TEST

Check connectors Radio and Antenna ends of Antenna Coaxial Cable. Connect a known good test Antenna to the Radio. The test Antenna must be designed for use with ARC Radios, as ARC Radios use a different size Antenna connector than conventional Radios.

- If Radio plays, replace the Antenna.
- If Radio still does not operate, send Radio to an authorized AC-Delco repair station.
- Refer to section 9A for removal and replacement procedures.

H: NOISE DIAGNOSIS

Unplug the Antenna at the back of the Radio.

- If noise disappears, it was being picked up by the Antenna. Consult the Delco Sound Service Guide for Antenna noise diagnosis.
- If the noise persists, it is coming in the Radio wiring. Refer to the following chart for a possible cause and corrective action.

NOISE DIAGNOSIS TEST

SYMPTOM	POSSIBLE CAUSE	REPAIR ACTION
Harsh popping noise that changes with engine rpm.	Ignition noise	Perform the steps found on the following page under Ignition Noise.
High whine (like a siren) that changes with engine rpm.	Generator noise	Add filter package 1224205 to power and/or memory lead to the Radio see Fig. 2 on the following page. By-pass the generator output with 250 MFD 100v capacitor. See Fig. 3. Install a braided ground strap on the Radio. See Fig. 1 on the following page. Run a direct wire from battery (+) to generator. Exchange the defective Radio with a good Radio. If noise disappears, send the defective Radio for repair. Replace generator.
Noise occurs only when an accessory is on.	Condition in that accessory	Install filter package 1224205 in the power lead(s) to that accessory. See Fig. 2 on the following page. Install a .5MFD by-pass capacitor at the power lead to that accessory. Consult Delco Sound Service Guide.
All stations weak, noisy, both AM and FM.	Defective antenna or lead-in wire	Temporarily replace the antenna with another one. Repair/replace the defective one if the Radio reception improves. Check at the Antenna Coax Lead-In, and the connector.
AM only, weak, noisy.	AM alignment	Remove Radio for repair.
FM only, weak, noisy.	FM alignment	Remove Radio for repair.
Noise present with engine not running.	ECM	Install filter package 1224205 in the power leads to the Electronic Control Module (ECM).

(Continued on next page)

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Noise that stops when Antenna is unplugged from back of Radio	Antenna noise	Replace defective antenna with a good antenna. If noise disappears repair or replace the defective antenna. Check antenna ground, Coaxial Cable Braid, and ground at connectors. If noise persists with replacement antenna, the problem must be repaired at the source of noise (generator, ignition system, accessory, etc.). See Delco Manual for noise "Sniffing" procedures.

Ignition Noise

Try the following fixes in the given order:

1. Check for loose or defective spark plug wire.
2. Check for defective spark plug.
3. Move all wiring away from Ignition System and spark plug wires.
4. Reroute spark plug wires laying against anything that could possibly transmit noise to the Radio (car wiring or sensor leads that travel into the passenger compartment).
5. Inspect Ignition system for the following and replace if necessary:
   - Distributor cap carbon ball eroded away, cracked or loose cap.
   - A rotor with burned black spot on wiper or pits in wiper surface.
   - A defective coil.
   - An oily film on some of the lead terminals or inside the cap.
   - Defective HEI module; can cause ignition noise on FM only.
6. Replace distributor cap and rotor.
7. Check the ground from engine to firewall; install a braided ground strap if necessary.
8. Install a braided ground strap on the hood.
9. Check Heater Core ground; clean or install a braided ground strap if necessary.
10. Check air conditioner accumulator ground; clean or install a braided ground strap if necessary.

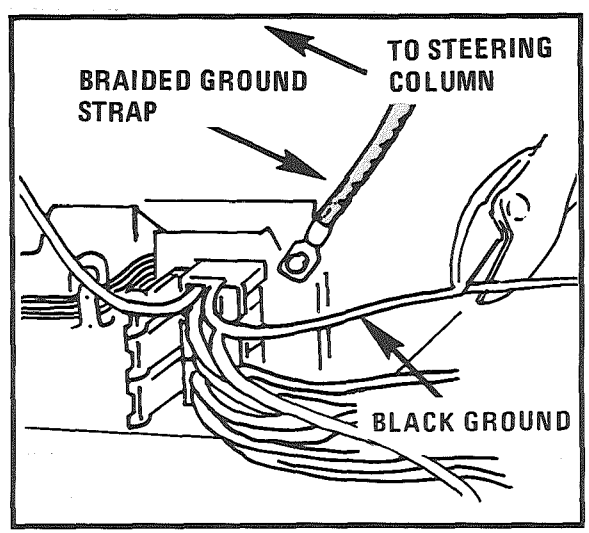


Figure 1 - Cut the BLACK (ground) wire from the black plug at the back of the Radio and run a braided ground strap from the case of the Radio to good, unpainted body ground.

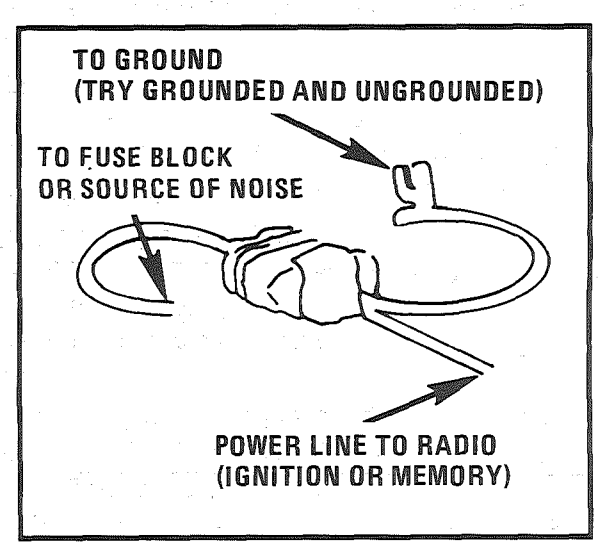


Figure 2 - Install a 1224205 filter package.

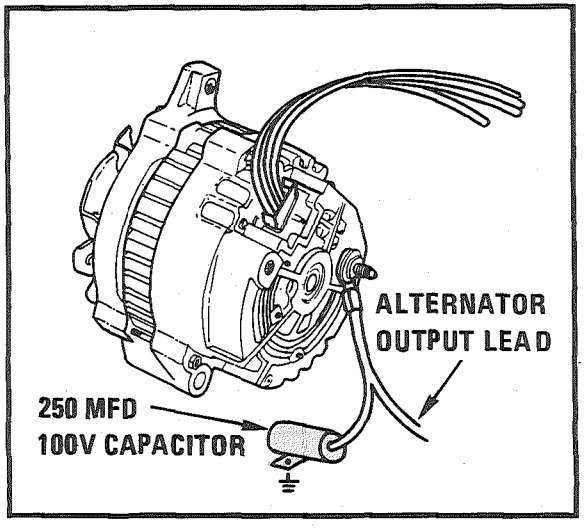


Figure 3. Install a 250 MFD, 100V capacitor on the alternator output lead to ground.

I: SUBWOOFER AMPLIFIER TEST (TABLE 1)

Measure: VOLTAGE
At: SUBWOOFER AMPLIFIER CONNECTOR (Connected)
Conditions:
- **Ignition Switch: RUN**
- **Radio: ON**

Measure Between	Correct Voltage	For Diagnosis
13 (PNK) & Ground	Battery	See 1
13 (PNK) & 14 (BLK)	Battery	See 2
• Subwoofer switch: ON		
3 (WHT) & Ground	Battery	See 3

- If all voltages are correct, go to Table 2.

1. Check/repair PNK (143) wire for an open.
2. Check/repair BLK (150) wire for an open.
3. Check/repair WHT (944) wire for an open. If OK, go to Test J Subwoofer Switch Test.

I: SUBWOOFER AMPLIFIER TEST (TABLE 2)

Measure: VOLTAGE
At: SUBWOOFER AMPLIFIER CONNECTOR (Connected)
Conditions:
- **Ignition Switch: RUN**
- **Radio: ON**
- **Subwoofer Switch: ON**

Measure Between	Correct Voltage	For Diagnosis
6 (RED) & Ground	Approx-imately 8 volts	See 1
• Gain Switch at Minimum		
9 (PPL) & Ground	3.5 to 4.5 volts	See 2
• Gain Switch at Mid Scale		
9 (PPL) & Ground	5.5 to 6.5 volts	See 2
• Gain Switch at Maximum		
9 (PPL) & Ground	Approx-imately 8 volts	See 2

- If all voltages are correct, go to Test K Subwoofer Speaker Test.

1. Replace Subwoofer Amplifier Assembly.
2. Check/repair PPL (1001) wire for an open. If OK, go to Test J: Subwoofer Switch Test.

J: SUBWOOFER SWITCH TEST

Measure: VOLTAGE
At: SUBWOOFER SWITCH CONNECTOR (Connected)
Conditions:
- **Ignition Switch: RUN**
- **Radio: ON**
- **Subwoofer Switch: ON**

Measure Between	Correct Voltage	For Diagnosis
F (PNK) & Ground	Battery	See 1
C(WHT) & Ground	Battery	See 2
A(RED) & Ground	Approximately 8 volts	See 3
F (PNK) & D (BLK)	Battery	See 4
• Gain Switch at Minimum		
B (PPL)& Ground	3.5 to 4.5 volts	See 2
• Gain Switch at Mid Scale		
B (PPL) & Ground	5.5 to 6.5 volts	See 2
• Gain Switch at Maximum		
B (PPL) & Ground	Approximately 8 volts	See 2

- If all voltages are correct, go to Test K Subwoofer Speaker Test.

1. Check PNK (143) wire for an open.
2. Replace Subwoofer Switch.
3. Check RED (1002) wire for an open.
4. Check BLK (150) wire for an open.

K: SUBWOOFER SPEAKER TEST

1. Disconnect suspect Subwoofer speaker connector and connect a known good 1.5 volt battery across speaker terminals.

Caution: Do not leave 1.5 volt battery connected for more than one second prolonged connection could damage speaker.

- If speaker pops, go to Subwoofer Speaker Test Table.
- If speaker does not pop, replace defective speaker.

K: SUBWOOFER SPEAKER TEST

Measure: AC VOLTAGE
At: SUBWOOFER AMPLIFIER CONNECTOR (Connected)
Conditions:
- **Speaker Wires: RECONNECTED**
- **Ignition Switch: RUN**
- **Radio: ON (High Volume)**
- **Subwoofer Switch: ON (Gain Switch at Maximum**

Measure Between	Correct Voltage	For Diagnosis
15 (LT BLU/ BLK) & 12 (DK BLU/ WHT)	Varying around 1 volt AC	See 1

- If the voltage is correct, check/repair wires between the Subwoofer Amplifier and the Subwoofer Speakers.

1. Remove Subwoofer Amplifier for service.

L: RADIO POWER INPUT TEST (TABLE 1)

Measure: VOLTAGE
At: RADIO CONNECTOR C1 (Disconnected)
Condition:
- **Ignition Switch: RUN**

Measure Between	Correct Voltage	For Diagnosis
F (YEL) & Ground	Battery	See 1
F (YEL) & G (BLK)	Battery	See 2

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

1. Check YEL (43) wire for an open (see schematic).
2. Check BLK (150) wire for an open to ground (see schematic).

L: RADIO POWER INPUT TEST (TABLE 2)

Measure: VOLTAGE
At: RADIO CONNECTOR C2 (with Subwoofer Amplifier) or C4 (without Subwoofer Amplifier)(Disconnected)

Measure Between	Correct Voltage	For Diagnosis
A (ORN) & Ground	Battery	See 1

- If the voltage is correct, remove Radio for service.

1. Check ORN (40) wire for an open (see schematic).

M: PANEL LIGHT TEST

Measure: VOLTAGE
At: RADIO CONNECTOR C1 (Disconnected)
Conditions:
- **Light Switch: PARK**
- **Dimmer Switch: BRIGHT**

Measure Between	Correct Voltage	For Diagnosis
M (GRY) & Ground	Battery	See 1

- If the voltage is correct, remove Radio for service.

1. Check GRY (8) wire for an open (see schematic).

N: DISPLAY DIMMING TEST

Measure: VOLTAGE
At: RADIO CONNECTOR C2 (with Subwoofer Amplifier) or C4 (without Subwoofer Amplifier)(Disconnected)
Condition:
- **Light Switch: PARK**

Measure Between	Correct Voltage	For Diagnosis
B (BRN) & Ground	Battery	See 1

- If the voltage is correct, remove Radio for service.

1. Check BRN (9) wire for an open (see schematic).

CIRCUIT OPERATION

The Radio Fuse provides power to the Radio and to the Power Antenna. With the Ignition Switch in ACCY or RUN, voltage is applied through the Radio Fuse and the YEL wire to the On-Off Switch in the Radio. The circuit is grounded at G200. With the On-Off Switch closed, voltage is applied from the Radio Fuse to the Radio Switch (Power Antenna), and the solid state Radio Circuits to ground. Two wires connect each speaker to the Radio.

The ETR Radio has two inputs that other models do not have; Display Dim Signal and Clock/Memory.

The ETR model is an AM/FM Radio that changes stations electronically. The frequency of pre-selected stations can be stored in the electronic memory. The ETR model also provides a digital display of time or station frequency. As in other models, the Light Switch controls Panel Light dimming. In the ETR model, dimming is also controlled by the Radio itself by means of the Dim Display Input Signal.

The ETR model's clock memory and Radio memory functions are powered at all times through the CTSY Fuse or through the ARC RADIO Fuse if equipped with the Remote Control Head. If power to the ETR model is cut off by disconnecting the Battery, for example, the operator must reset the memory functions when power is restored.

Subwoofer Speaker System

The Subpower Speaker System consists of a Subwoofer Amplifier Assembly and two Subwoofers. The Amplifier receives power from the Radio PNK (143) wire and is grounded at G200. The Amplifier Switch is located in the Subwoofer Switch which, when put in the ON position, causes the Subwoofer Amplifier to operate. The eight audio inputs from the I/P Speakers and Rear Speakers are sent to the Subwoofer Amplifier which then outputs an audio signal to the Subwoofers.

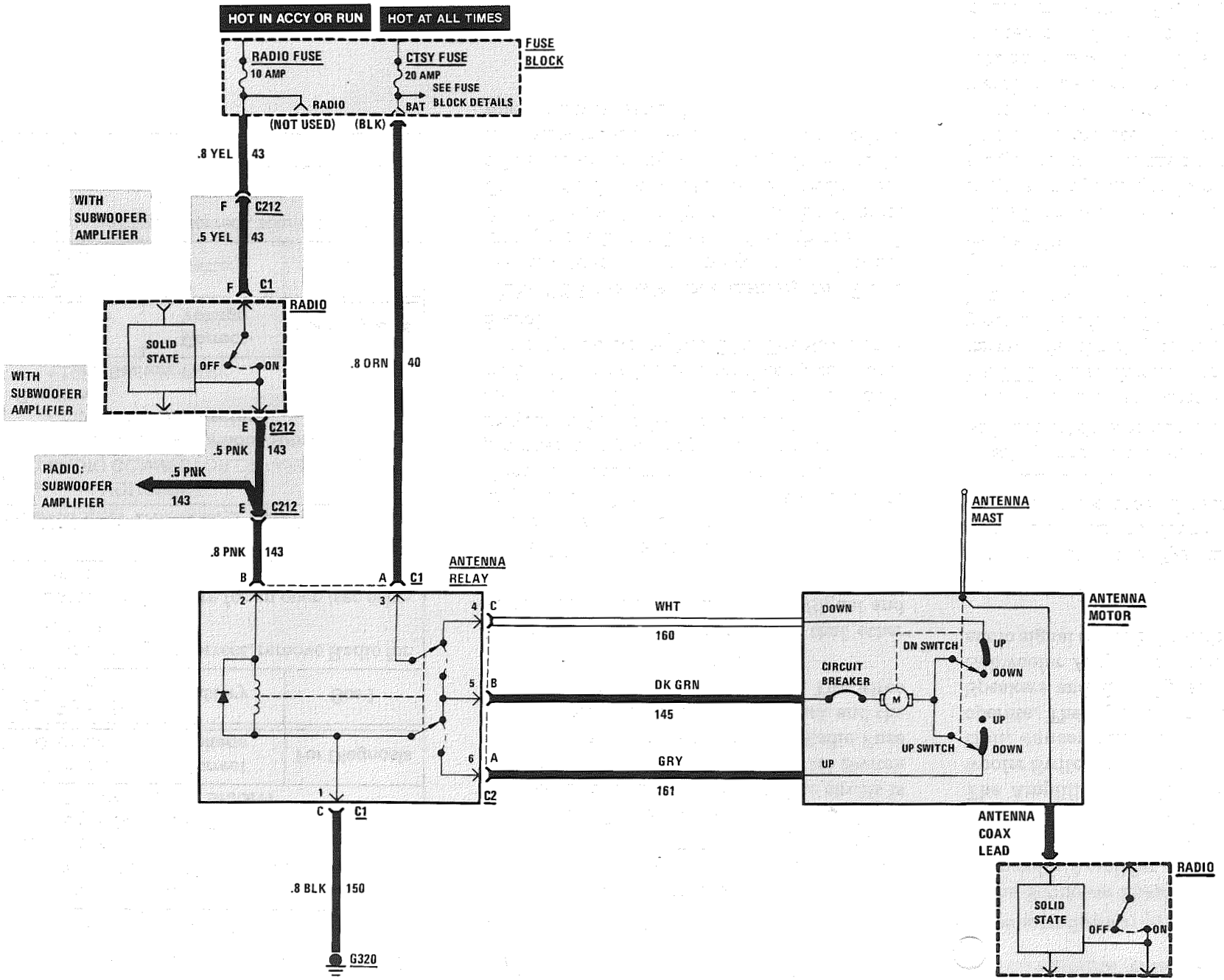
Remote Radio System

The Remote Radio System consists of a multifunction Remote Control Head and Data Transmitter located in the steering wheel, a Slip Ring and a rotating optical data link in the steering column, and an ARC Radio equipped with a serial data port for remote control.

Power for the electronics is supplied from the RADIO Fuse, through the YEL (43) wire, through the slip ring to the Control Head. The ground (the BLK/LT BLU (151) wire) and Panel Lamps Power (the GRY (8) wire) are likewise supplied to the Control Head through the Slip Ring assembly.

The Remote Control Head controls the Radio by generating a unique data word for each operating function when the button controlling that function is pressed. The data words are converted from an electronic signal to an optical signal by the Light Transmitter in the steering column Cancel Cam. The light signal then crosses the air gap to the Light Receptor located in the Turn Signal Switch where it is reconverted to an electronic signal. This signal is then routed via wire to the Radio, which responds to the Control signal.

POWER ANTENNA



TROUBLESHOOTING HINTS

- **Try the following checks before doing the System Check.**

1. Check the Radio Fuse by turning the Radio ON and noting that the display lights come on.
2. Check the CTSY Fuse by operating the Cigar Lighter.
3. Power Antenna goes up or down part way.

— Check Power Antenna mast for bent condition or dirt. If mast is dirty and/or bent, straighten the mast and clean off the dirt. Lube with light oil and check operation. If the mast is straight and clean, replace the Antenna Motor.

- **Go to System Check for a guide to normal operation.**
- **Go to System Diagnosis for diagnostic tests.**

SYSTEM CHECK

- **Use the System Check Table as a guide to normal operation.**

SYSTEM CHECK TABLE

ACTION	NORMAL RESULT
With the Ignition Switch in RUN, turn Radio ON	Antenna mast extends to full height Radio receives strong broadcast signals
Turn Radio OFF	Antenna retracts into fender

COMPONENT LOCATION

		Page-Figure
Antenna Motor	In RH front fender, behind wheel well	201-16-B
Antenna Relay	Behind RH side of I/P, to left of ECM	201-12-B
Fuse Block	Behind LH side of I/P, below light switch	201-10-A
C212 (12 cavities)	Behind center of I/P	201-13-B
G320	Behind RH side of I/P	201-12-B

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

SYSTEM DIAGNOSIS

- **Make the measurements given in the following tables if the Antenna does not operate.**

A: ANTENNA DOES NOT OPERATE (TABLE 1)

Measure: VOLTAGE
At: ANTENNA RELAY CONNECTOR C1 (Disconnected)
Conditions:
- **Ignition Switch: RUN**
- **Radio: ON**

Measure Between	Correct Voltage	For Diagnosis
A (ORN) & Ground	Battery	See 1
A (ORN) & C (BLK)	Battery	See 2
B (PNK) & Ground	Battery	See 3

(Continued in next column)

(Continued from previous column)

- If all voltages are correct, go to Table 2.

1. Check ORN (40) wire for an open.
2. Check BLK (150) wire for an open to ground.
3. Check PNK (143) wire for an open to the Radio. Remove the radio for repair if wire is OK (see schematic).

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A: ANTENNA DOES NOT OPERATE (TABLE 2)

Connect: FUSED JUMPERS
At: ANTENNA RELAY CONNECTORS C1 & C2 (Disconnected)

Jumper Between	Correct Result	For Diagnosis
C1/A (ORN) to C2/B (DK GRN) and C2/A (GRY) to C1/C (BLK)	Antenna Mast Extends	See 1
C1/A (ORN) to C2/C (WHT) and C2/B (DK GRN) to C1/C (BLK)	Antenna Mast Retracts	See 1

- If all results are correct, replace the Antenna Relay.

1. Replace the Antenna motor.

CIRCUIT OPERATION

When the Radio is turned on, voltage is applied from the PNK wire to the Antenna Relay coil. The Antenna Relay contacts close, and battery voltage is supplied to the DK GRN wire and then to the Antenna Motor. The other motor terminal is grounded through the UP Switch, the GRY wire, and the relay contacts. The motor drives the Antenna up. At the end of its travel, the Up Switch opens and the motor stops.

When the Radio or ignition is turned off, the circuit through the Antenna Relay coil opens. The contacts open to the position shown in the schematic, applying battery voltage to the WHT wire. The DK GRN wire is now grounded. Since the DN Switch at the Antenna is now making contact to the WHT wire, the voltage to the motor has reversed polarity. It runs in the opposite direction and drives the antenna down. At the end of the travel, the DN Switch opens the circuit. Both sets of switches are now in the positions shown in the schematic with the Radio off and the Antenna down.

The Antenna is connected to the Radio by a coaxial cable.

BLANK

COMPONENT LOCATION VIEWS

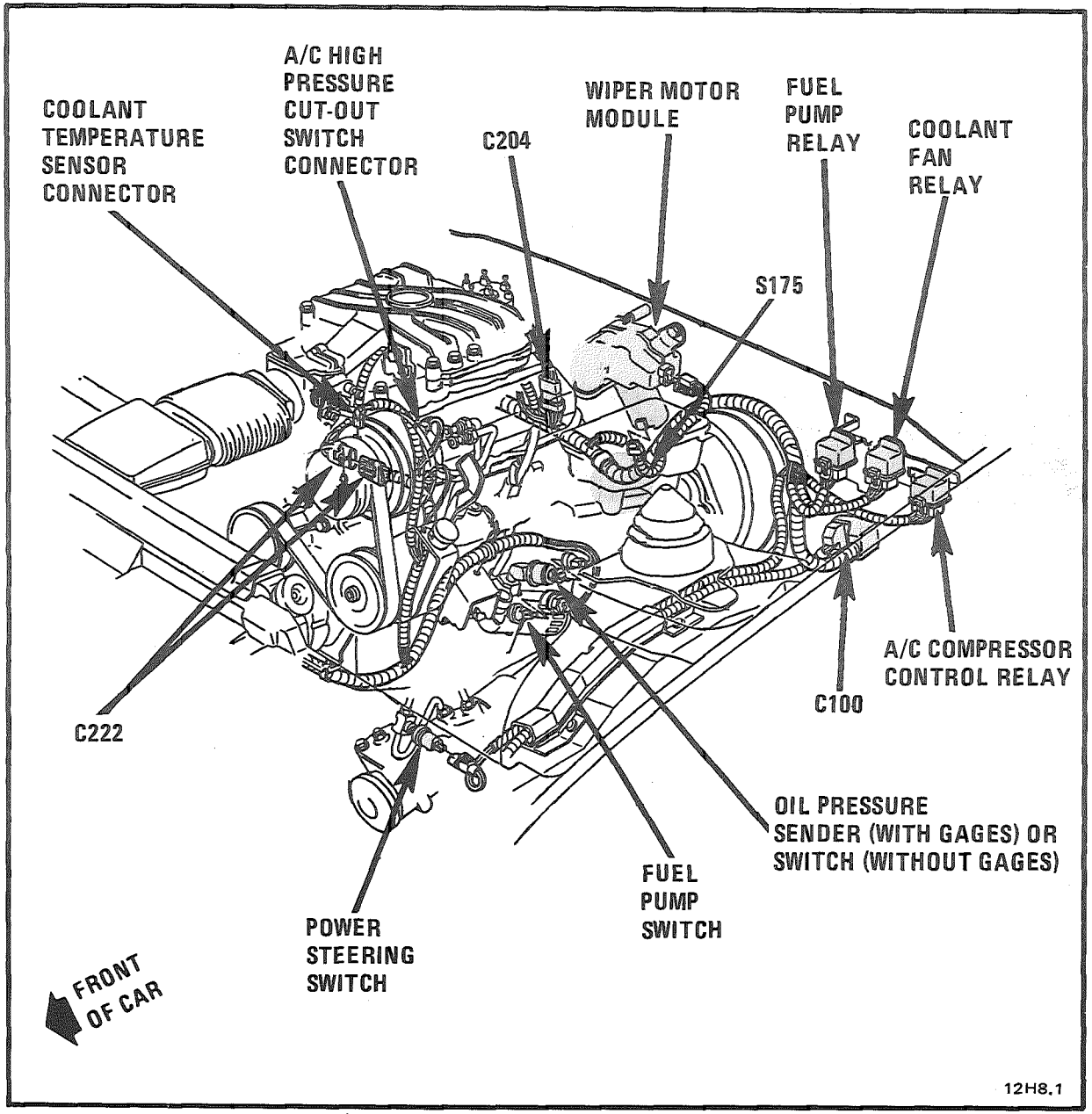


Figure A - LH Side Of VIN S Engine Compartment

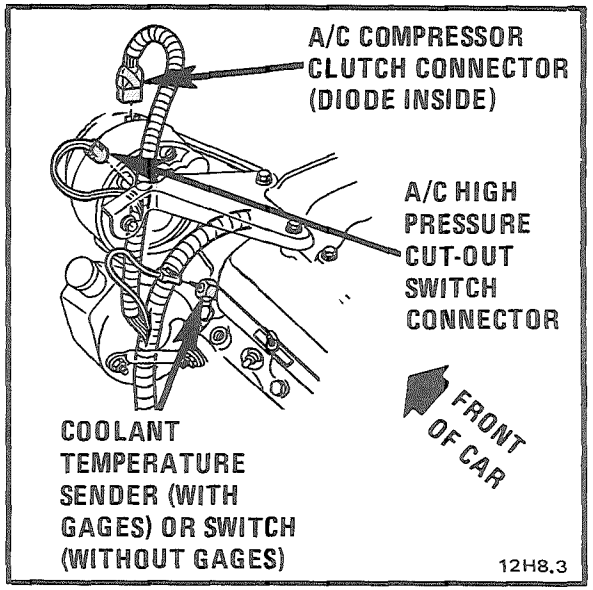


Figure B - Top LH Front Of VIN S Engine

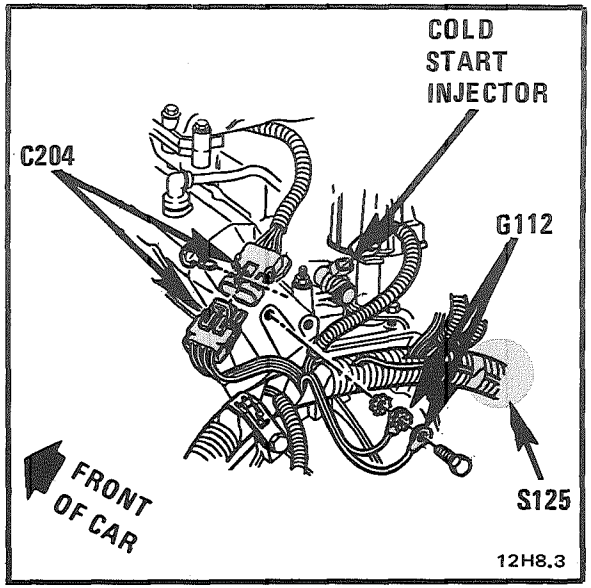


Figure C - Top LH Rear Of VIN S Engine

COMPONENT LOCATION VIEWS

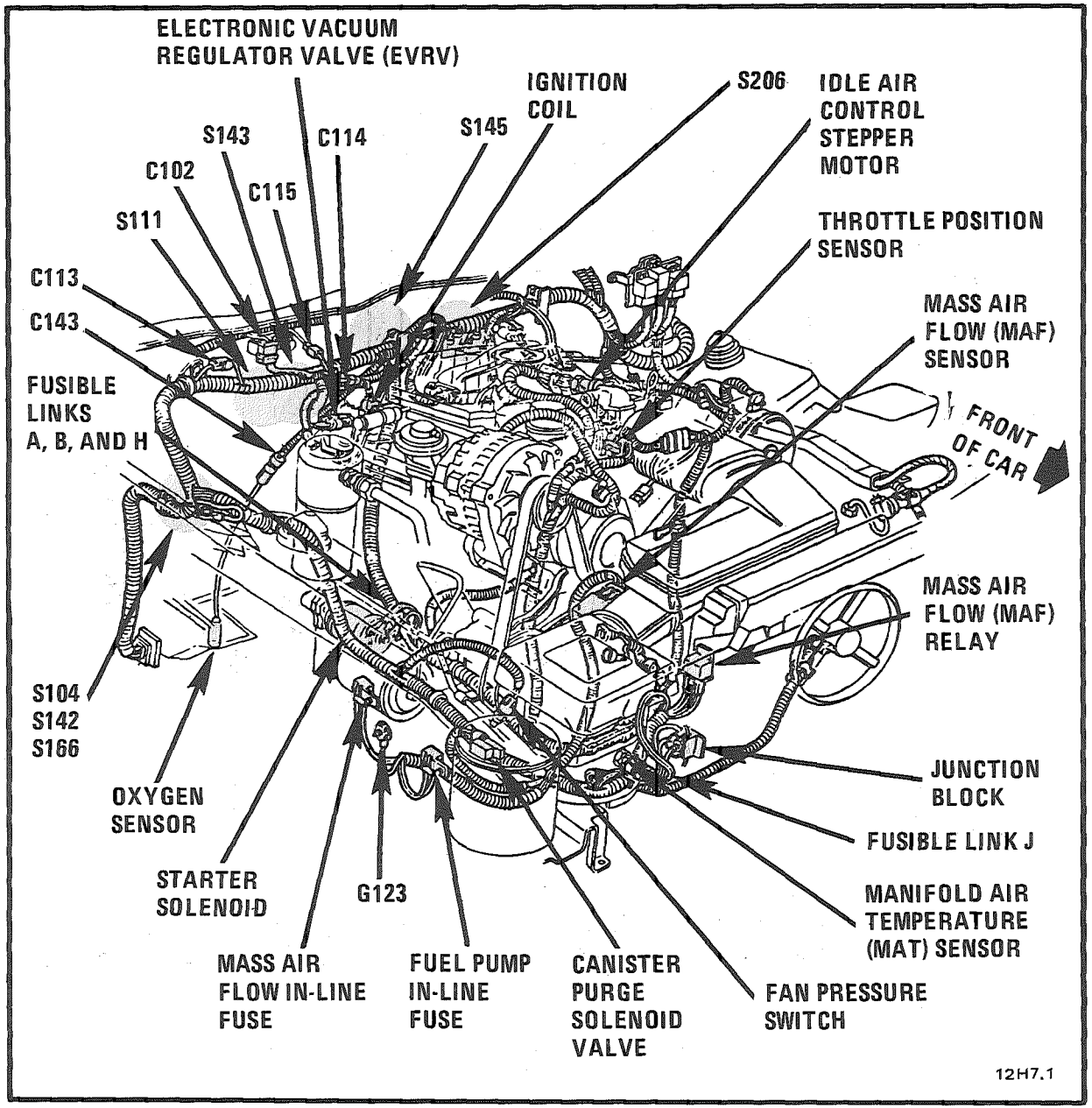


Figure A - VIN S Engine Compartment

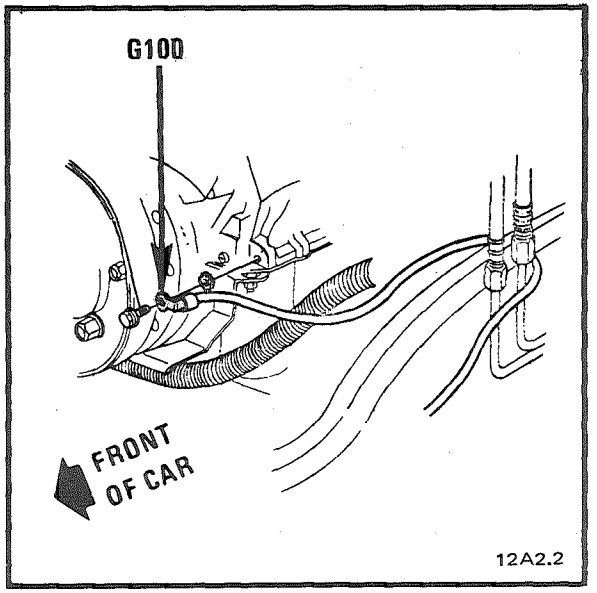


Figure B - Lower LH Front Of VIN S Engine

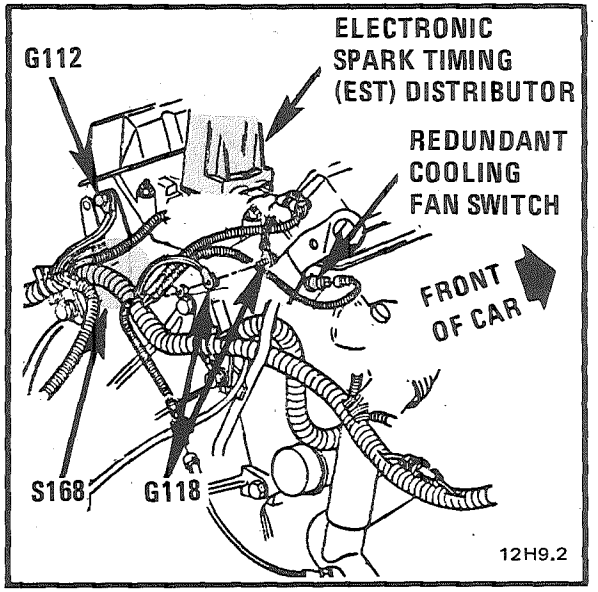


Figure C - Top LH Rear Of VIN S Engine

COMPONENT LOCATION VIEWS

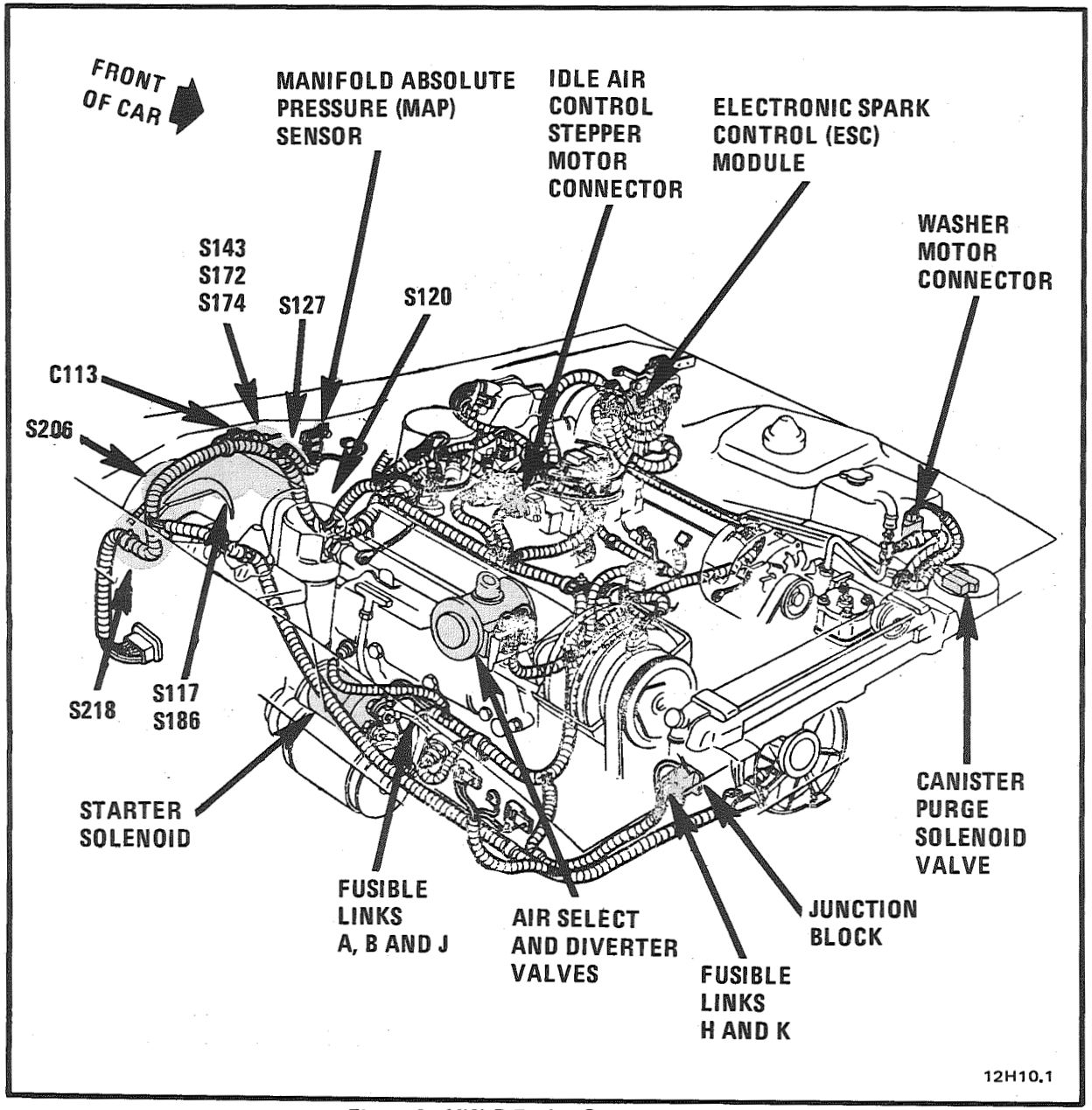


Figure A - VIN E Engine Compartment

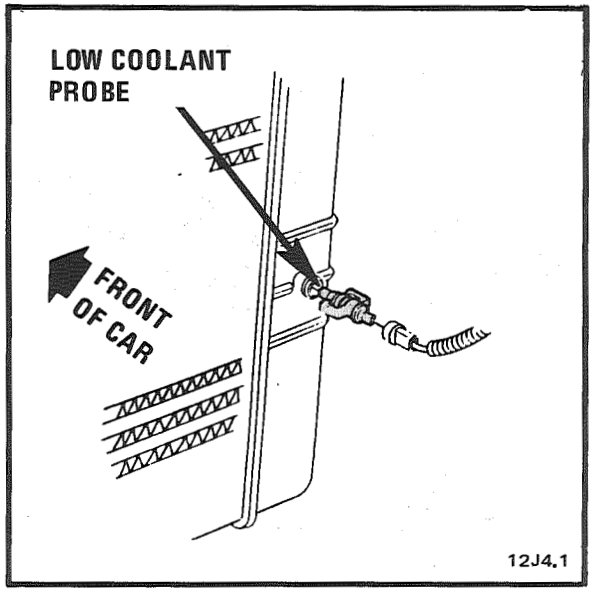


Figure B - RH Front Of Radiator (Except VIN S)

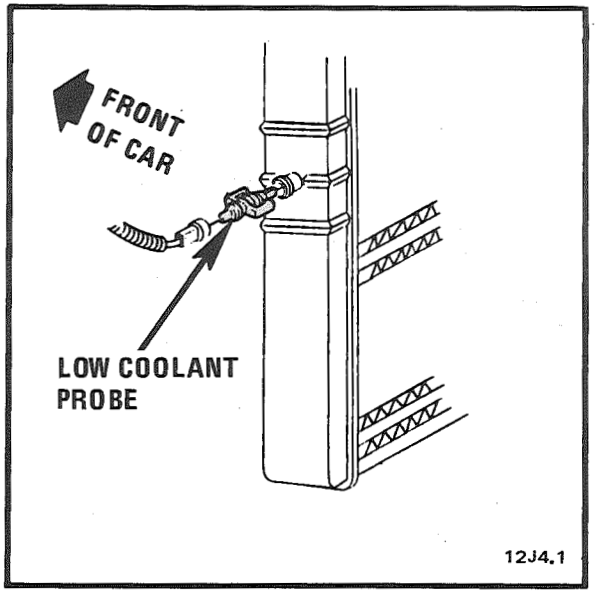


Figure C - LH Side Of Radiator (VIN S)

COMPONENT LOCATION VIEWS

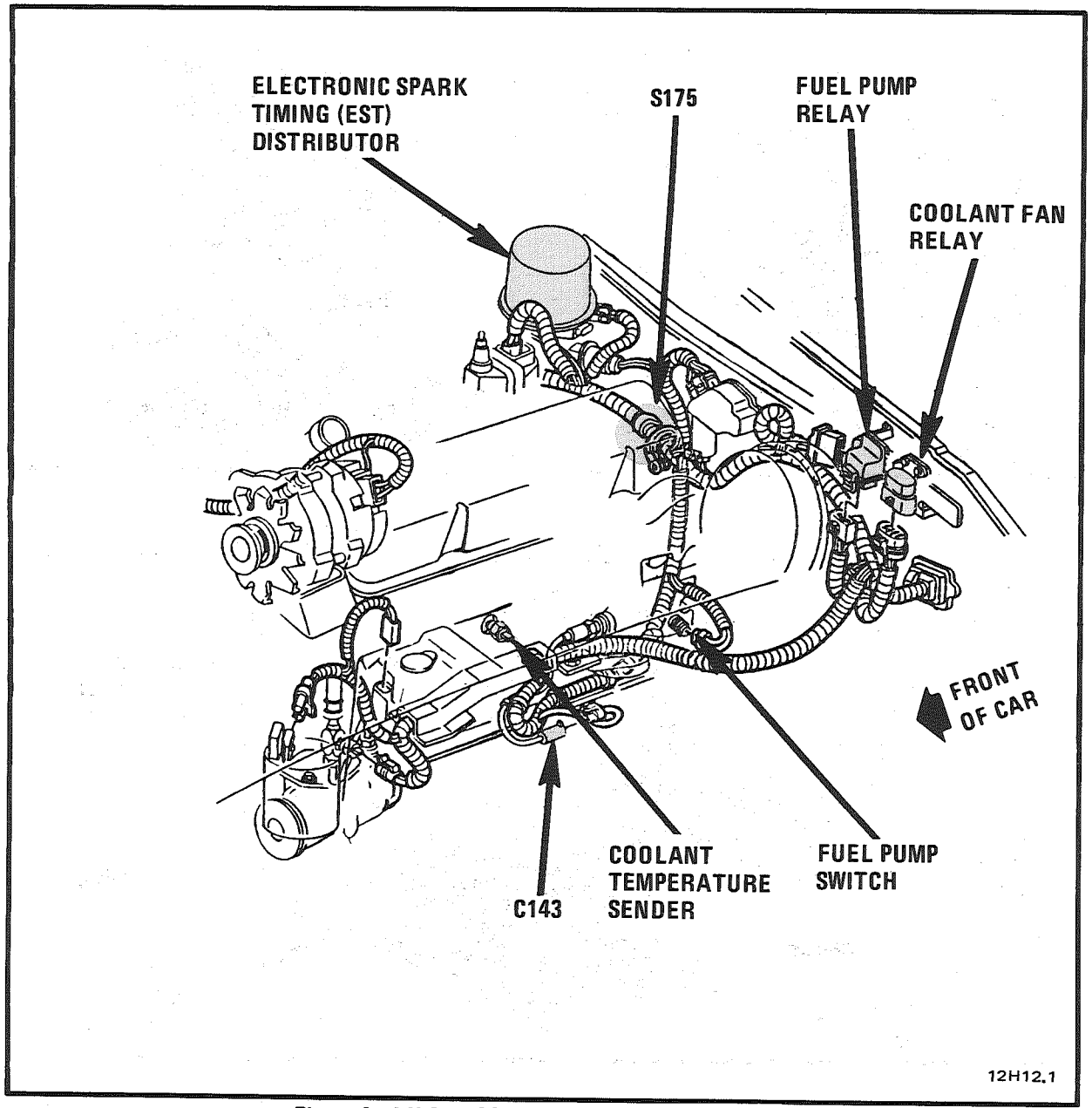


Figure A - LH Side Of VIN E Engine Compartment

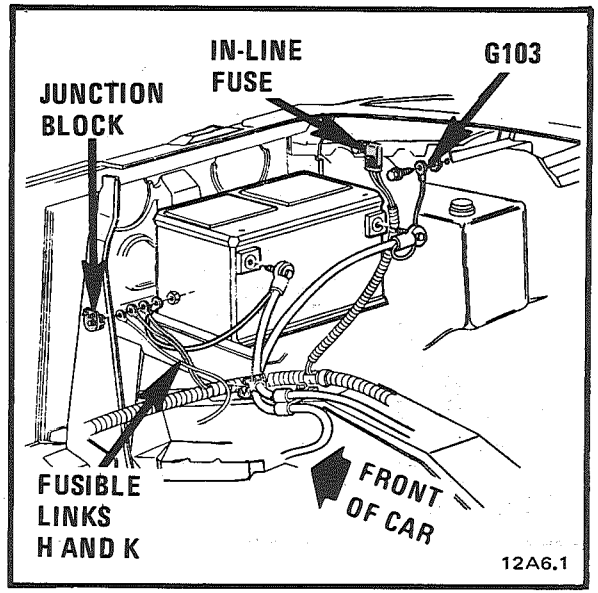


Figure B - RH Front Corner Of VIN E Engine Compartment

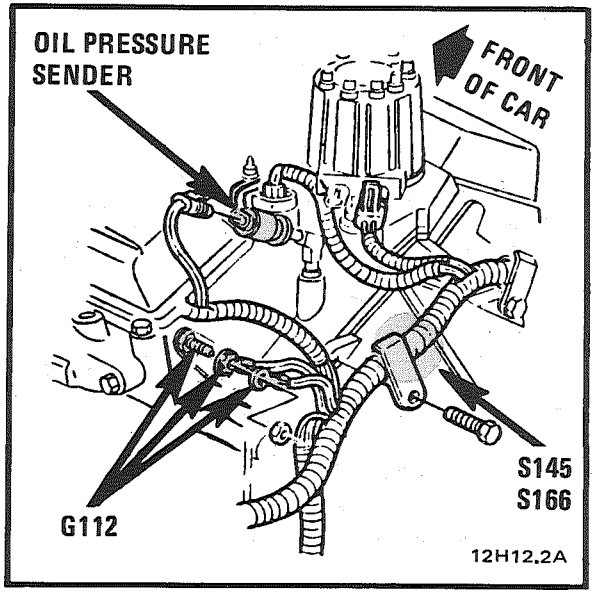


Figure C - LH Rear Of VIN E Engine

COMPONENT LOCATION VIEWS

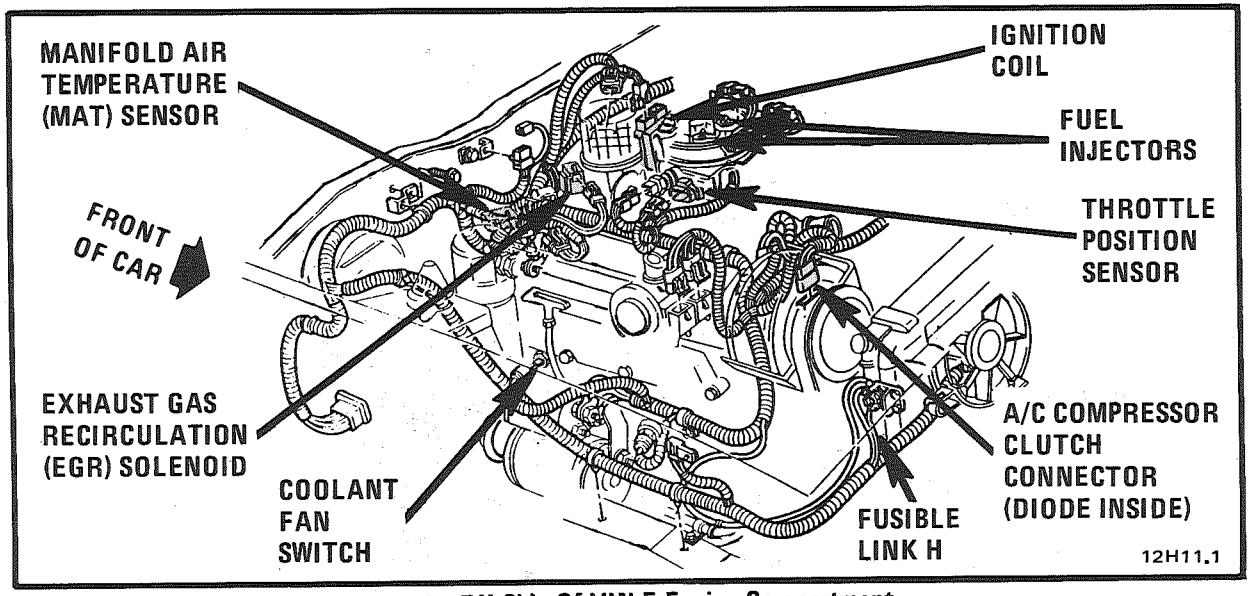


Figure A - RH Side Of VIN E Engine Compartment

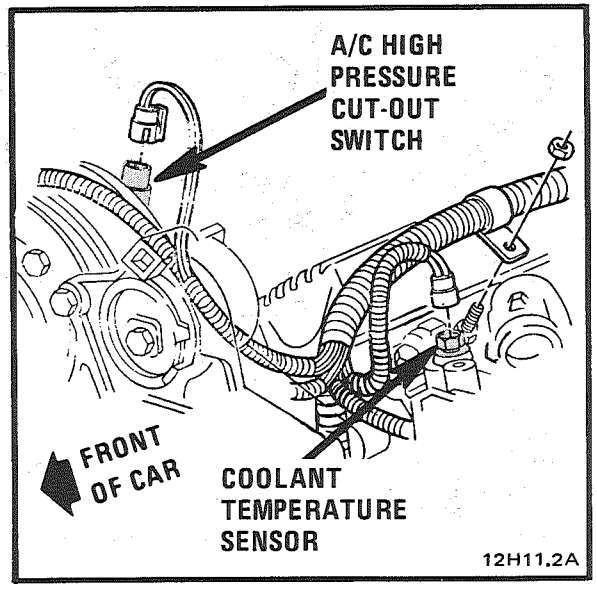


Figure D - Top LH Front Of VIN E Engine

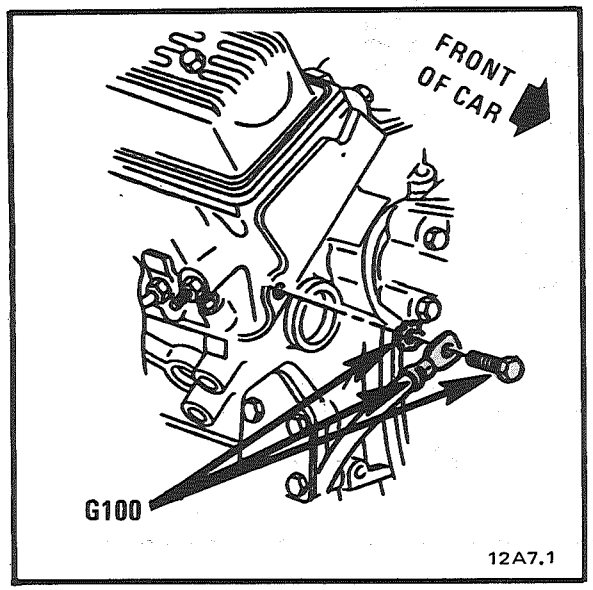


Figure B - RH Front Of VIN E Engine

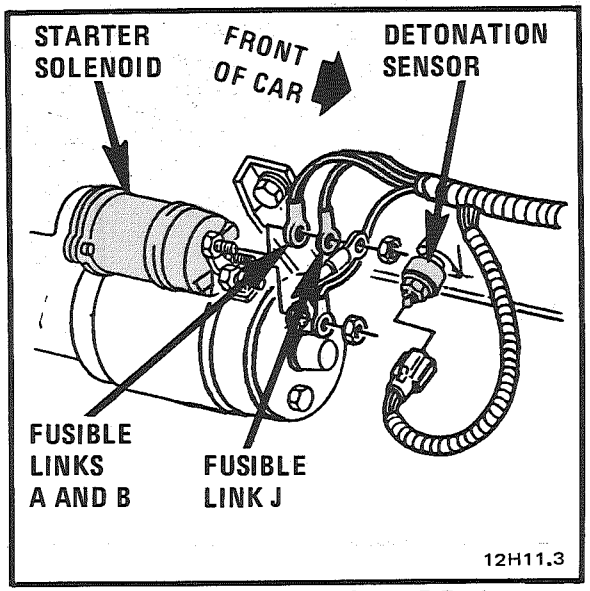


Figure C - Lower RH Side Of VIN E Engine

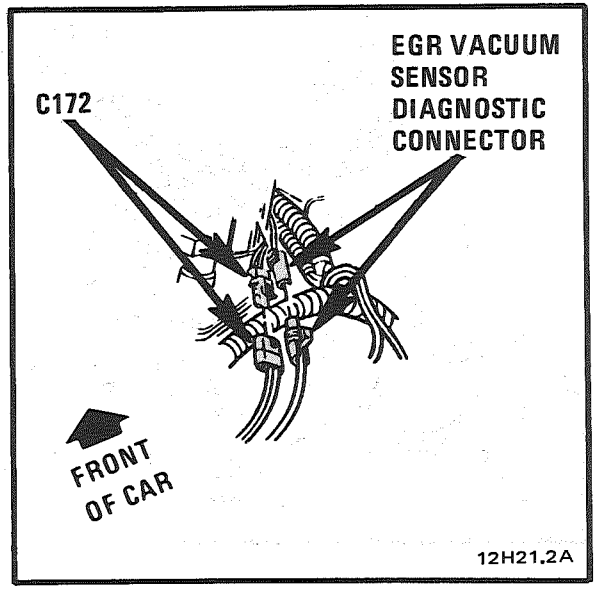


Figure E - Top Rear Of VIN F Engine (VIN 8 Similar)

COMPONENT LOCATION VIEWS

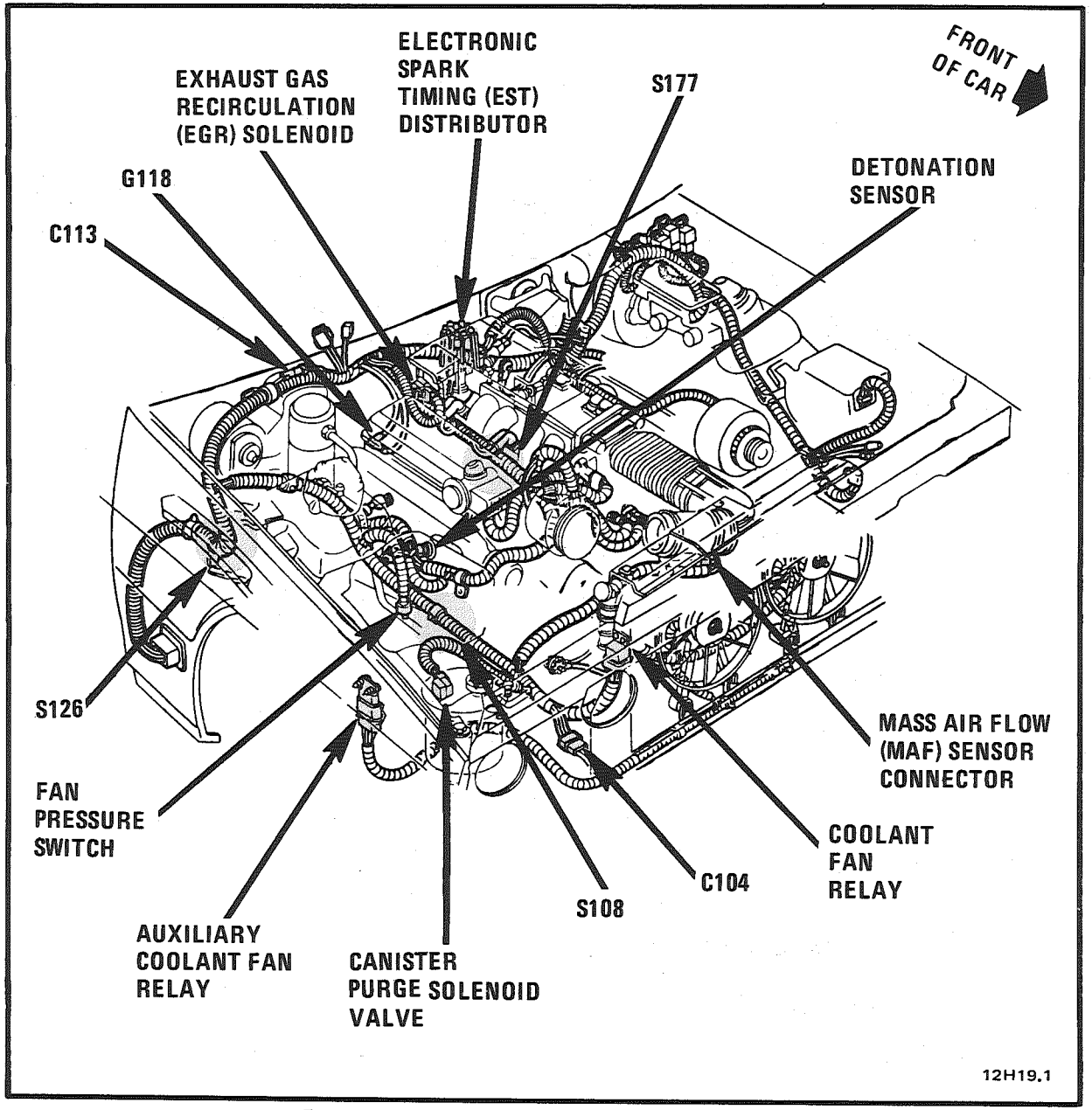


Figure A - VIN F Engine Compartment (VIN 8 Similar)

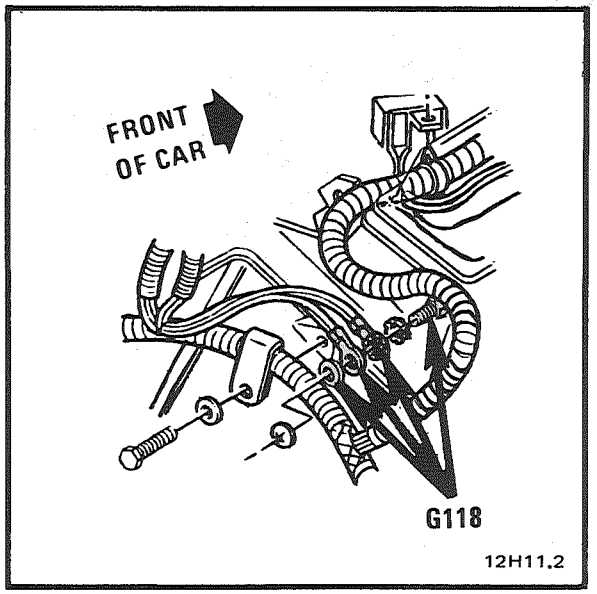


Figure B - Rear Of RH Cylinder Head (VIN E)

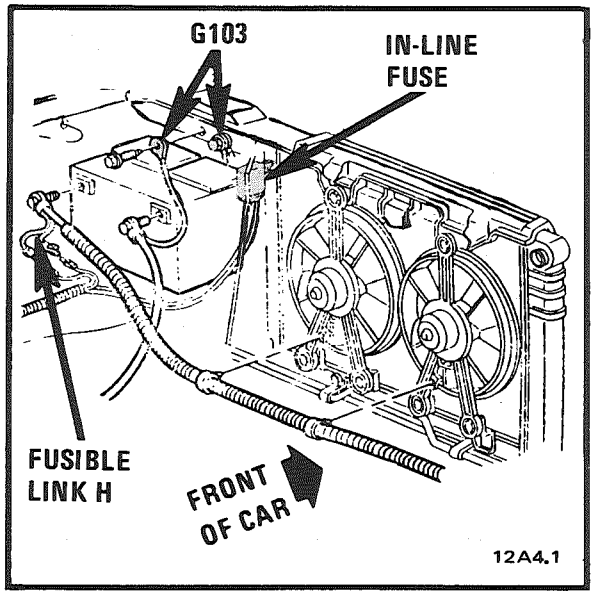


Figure C - LH Front Corner Of VIN F Engine Compartment (VIN 8 Similar)

COMPONENT LOCATION VIEWS

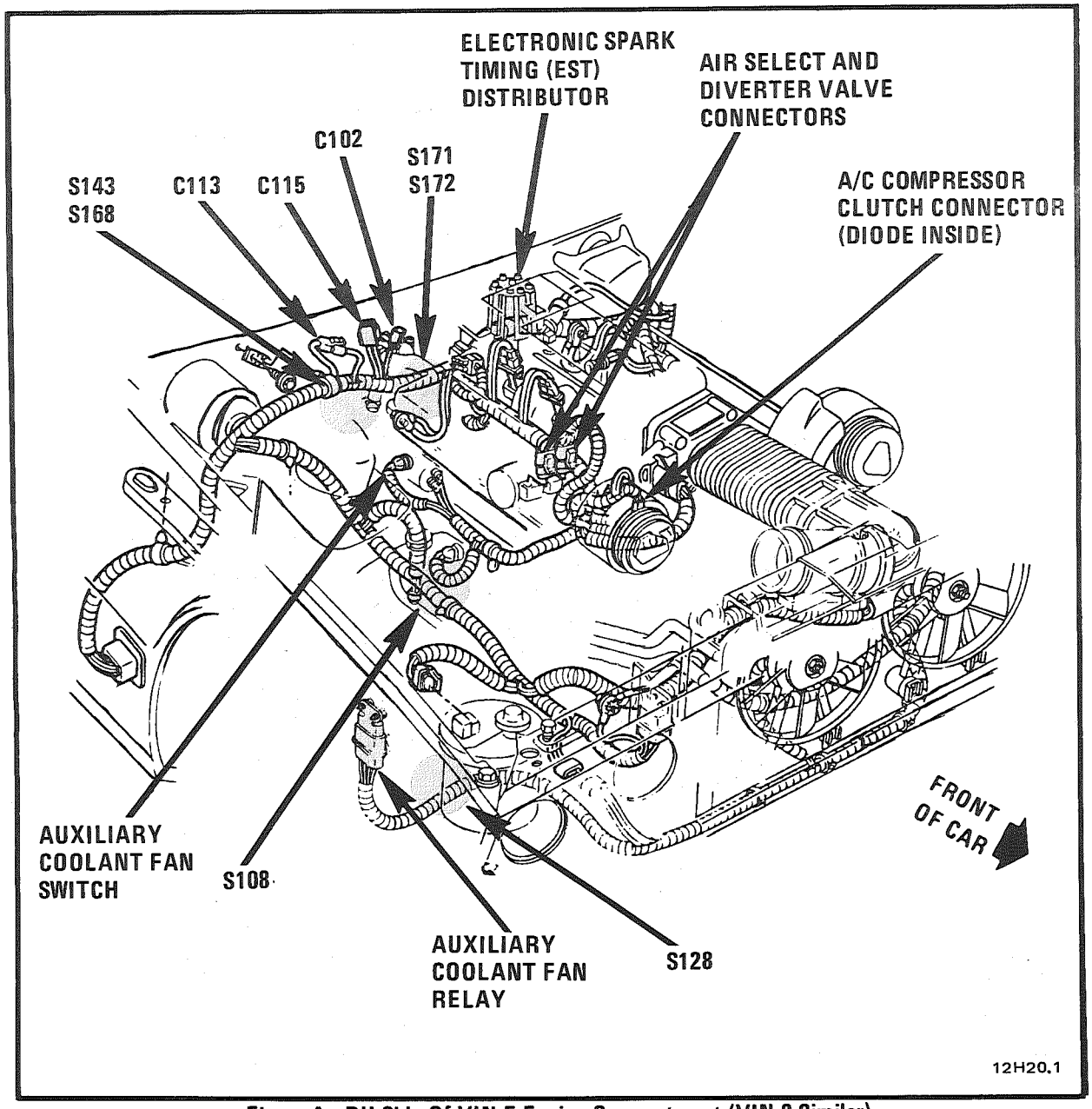


Figure A - RH Side Of VIN F Engine Compartment (VIN 8 Similar)

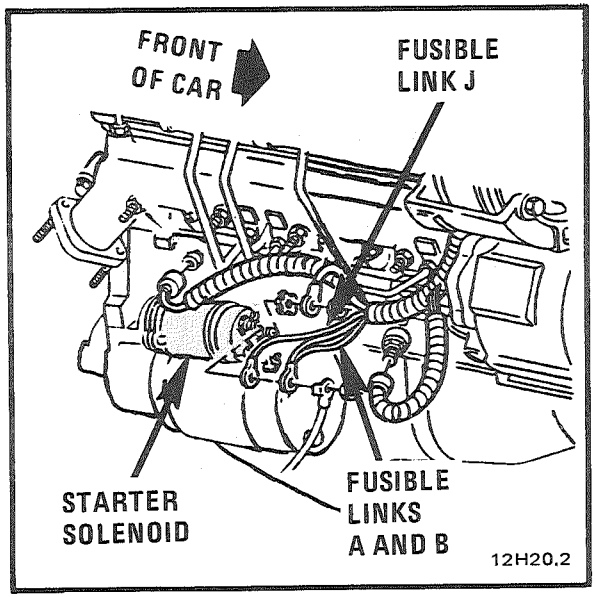


Figure B - Lower RH Side Of VIN F Engine (VIN 8 Similar)

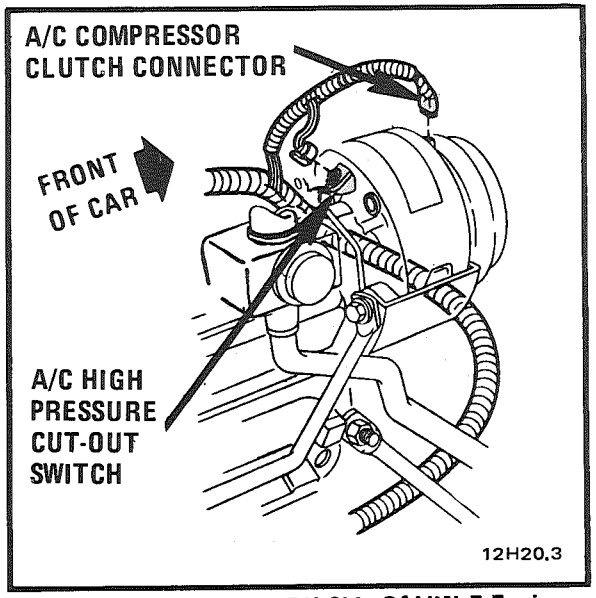


Figure C - Top Front RH Side Of VIN F Engine (VIN 8 Similar)

COMPONENT LOCATION VIEWS

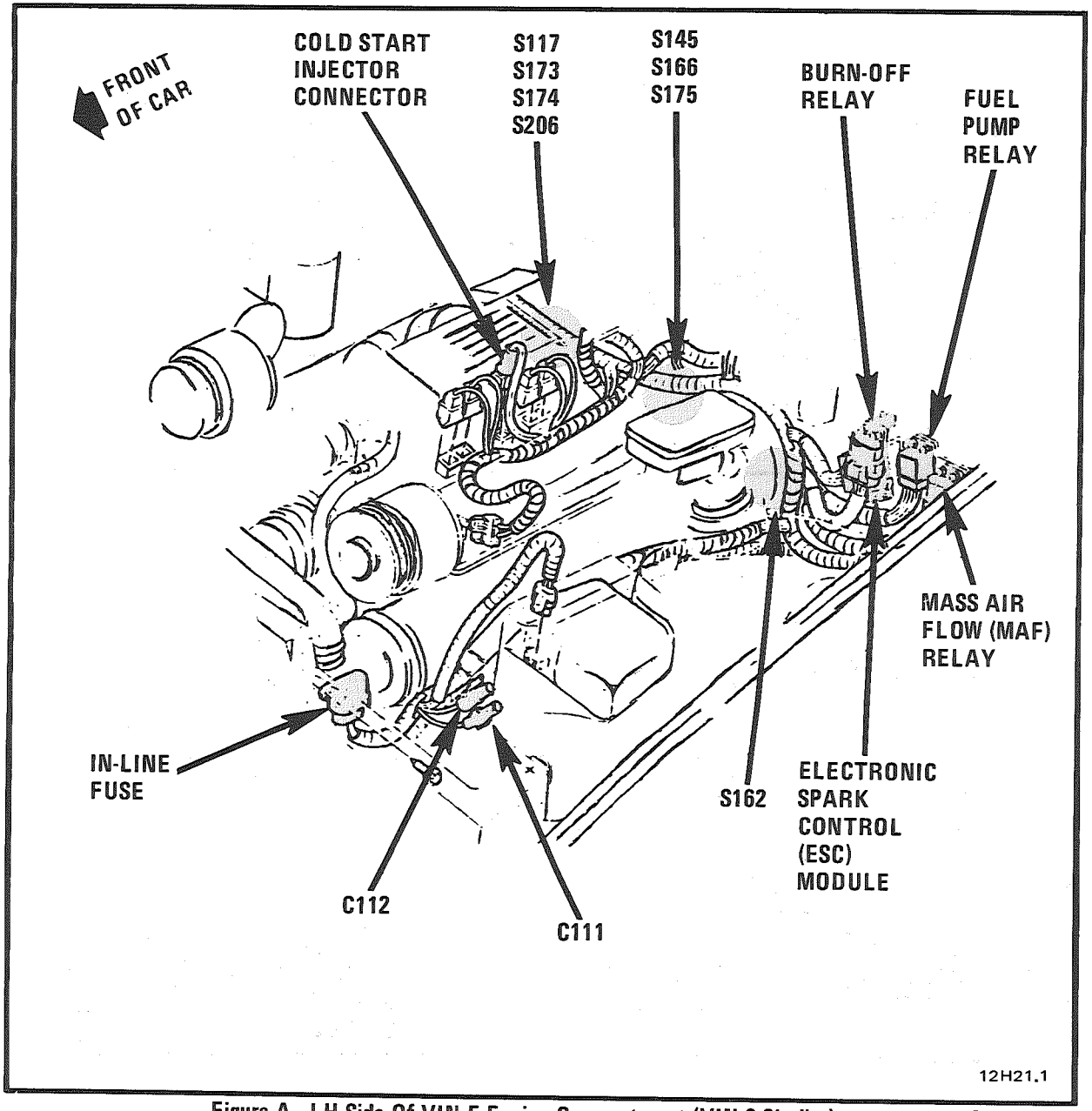


Figure A - LH Side Of VIN F Engine Compartment (VIN 8 Similar)

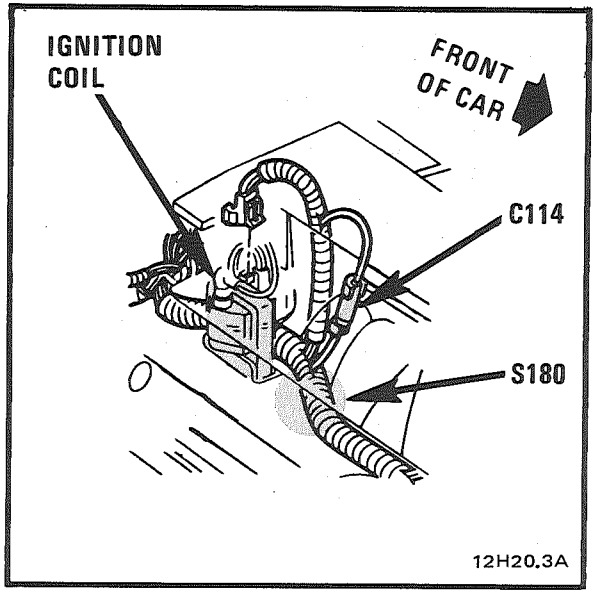


Figure B - RH Rear Side Of VIN F Engine (VIN 8 Similar)

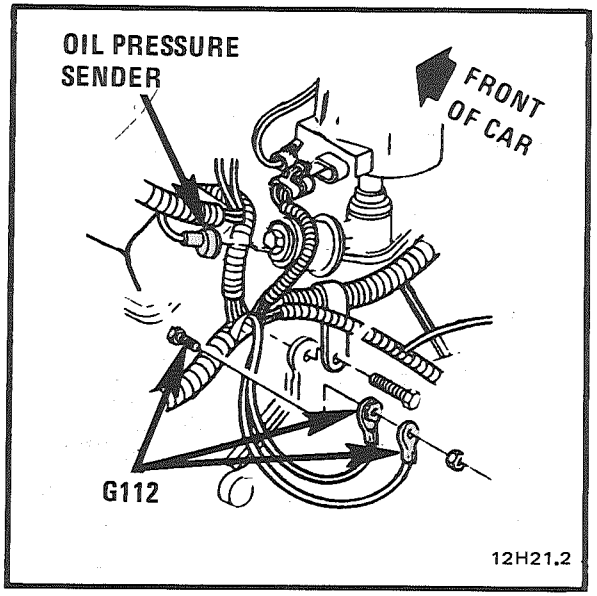


Figure C - Top LH Rear Of VIN F Engine (VIN 8 Similar)

COMPONENT LOCATION VIEWS

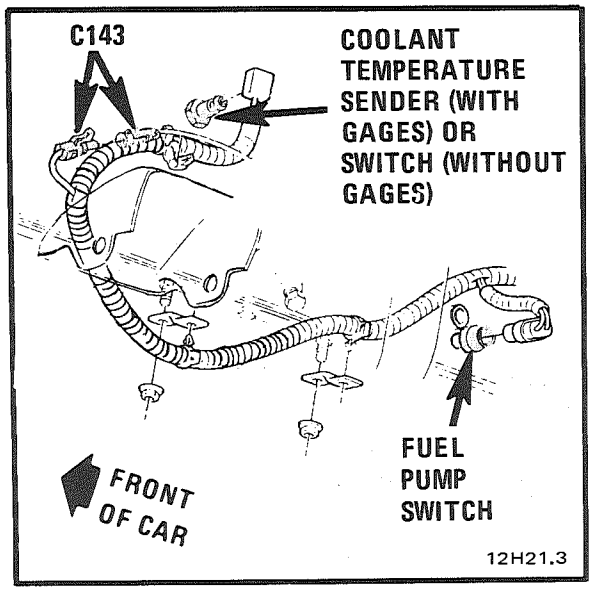


Figure A - Lower LH Side Of VIN F Engine (VIN 8 Similar)

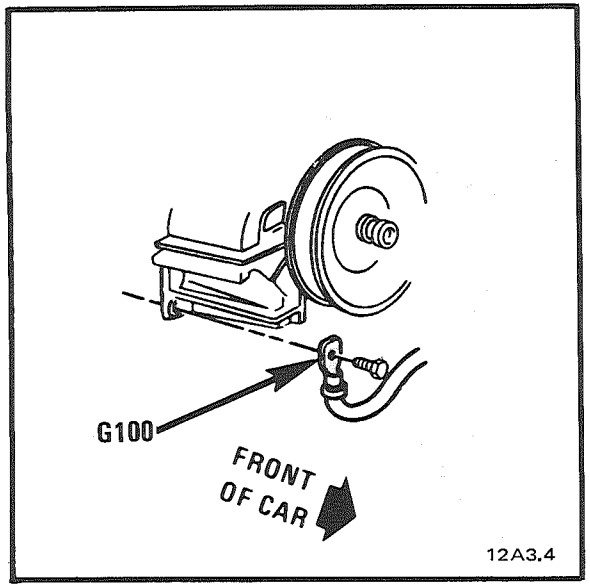


Figure B - Lower LH Front Of VIN F Engine (VIN 8 Similar)

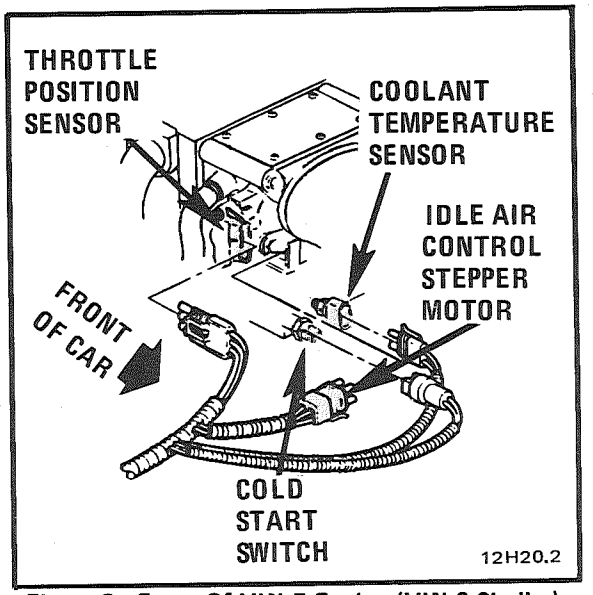


Figure C - Front Of VIN F Engine (VIN 8 Similar)

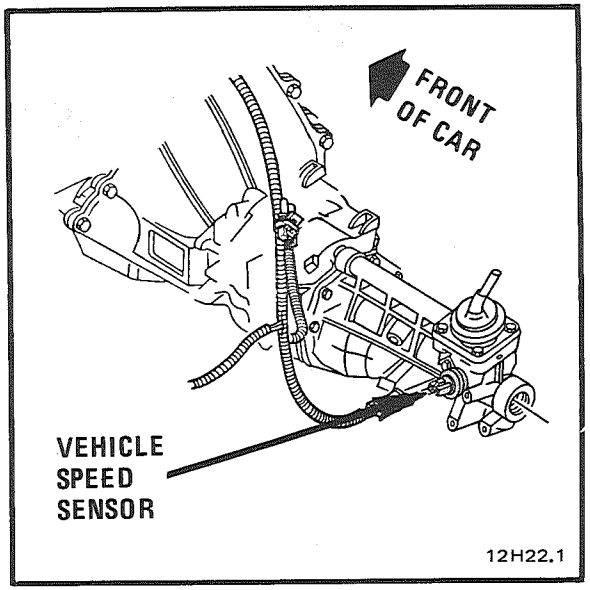


Figure D - LH Side Of Transmission (Manual Shown, Automatic Similar)

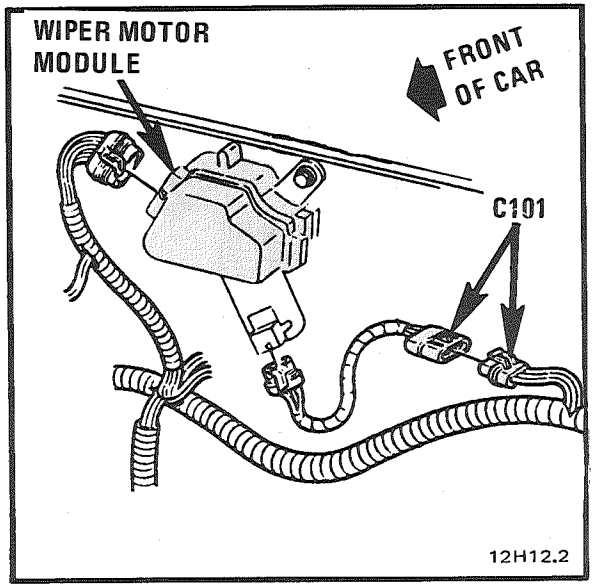


Figure E - Center Front Of Dash

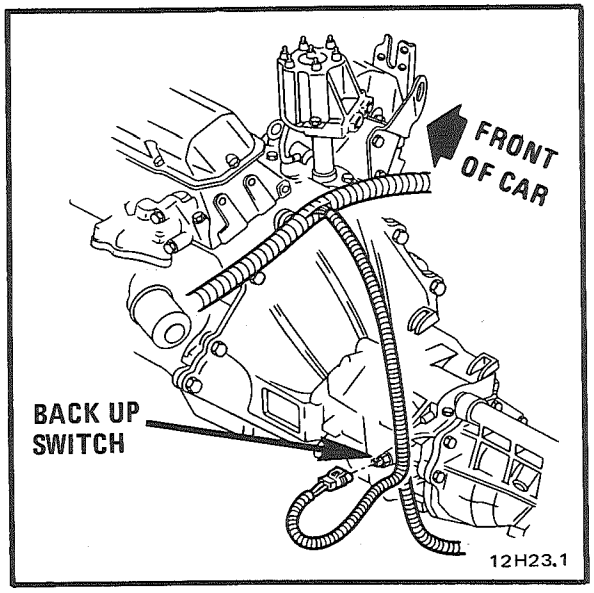


Figure F - LH Side Of Manual Transmission

COMPONENT LOCATION VIEWS

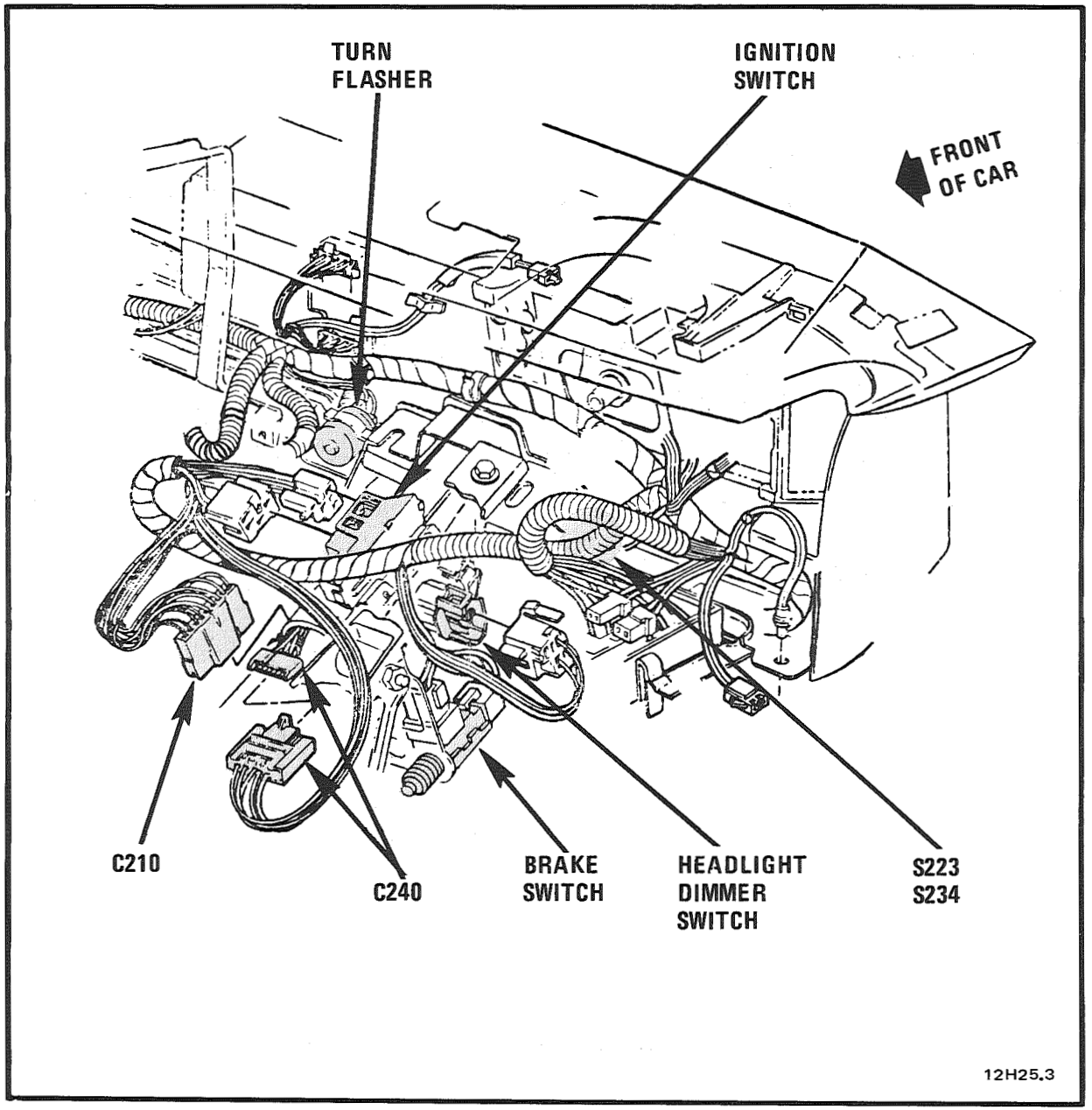


Figure A - Behind LH Side Of I/P

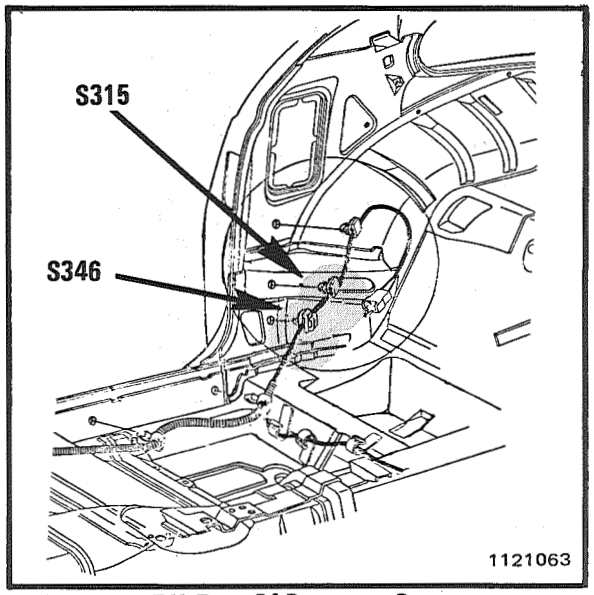


Figure B - RH Rear Of Passenger Compartment

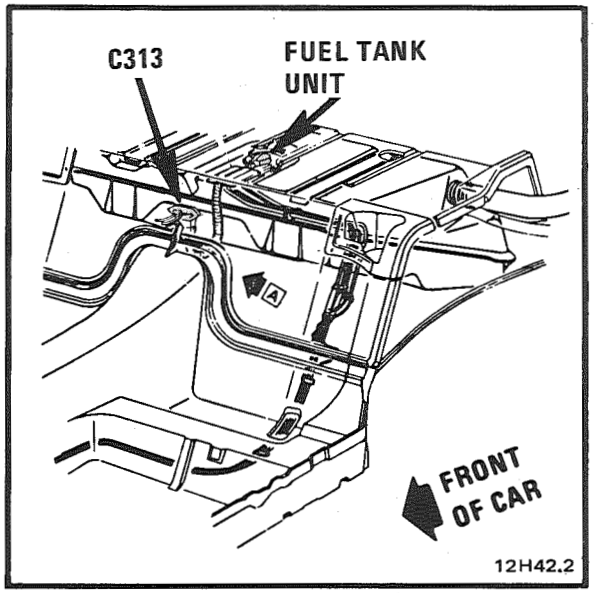


Figure C - Below Rear Of Car

COMPONENT LOCATION VIEWS

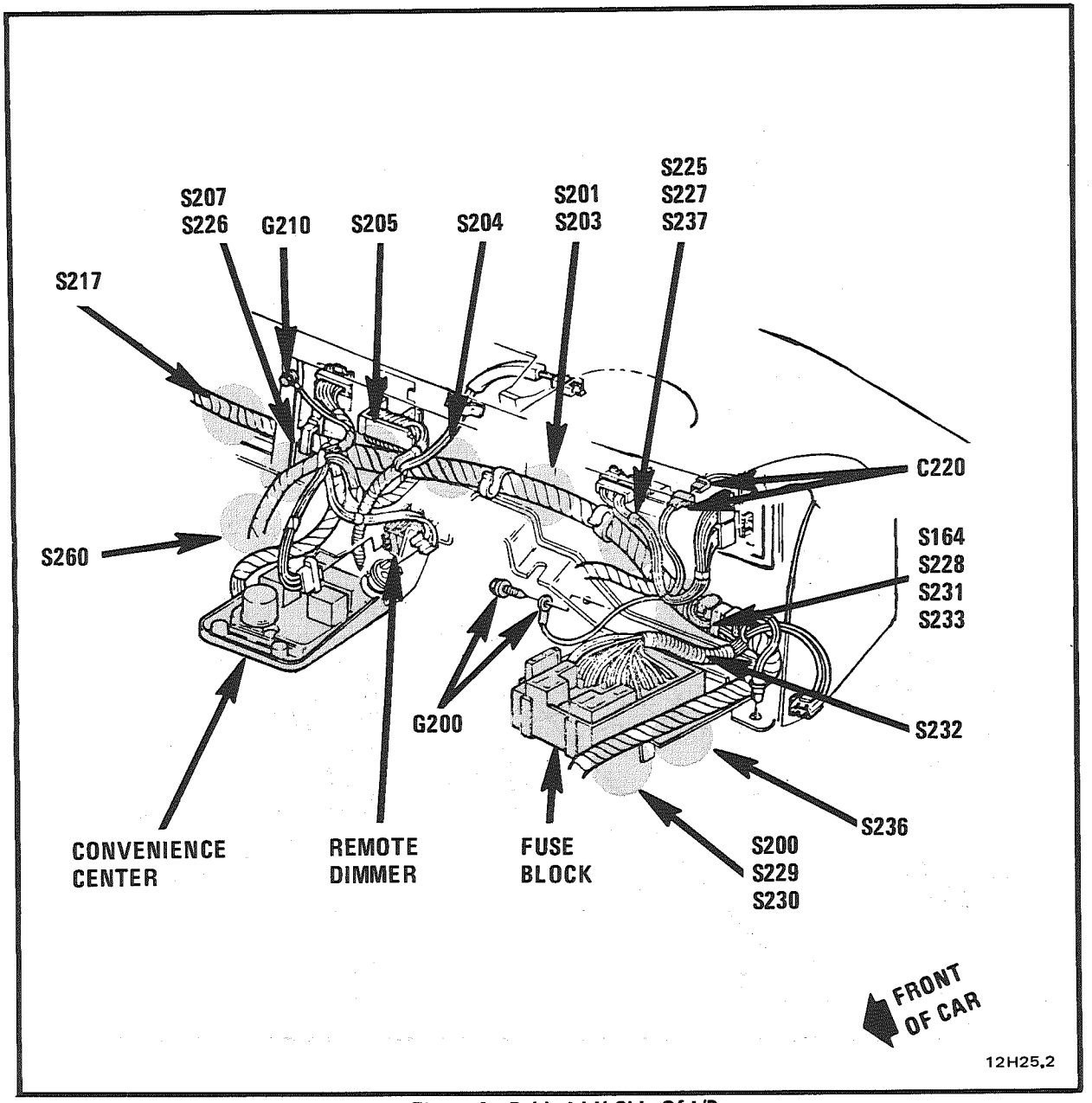


Figure A - Behind LH Side Of I/P

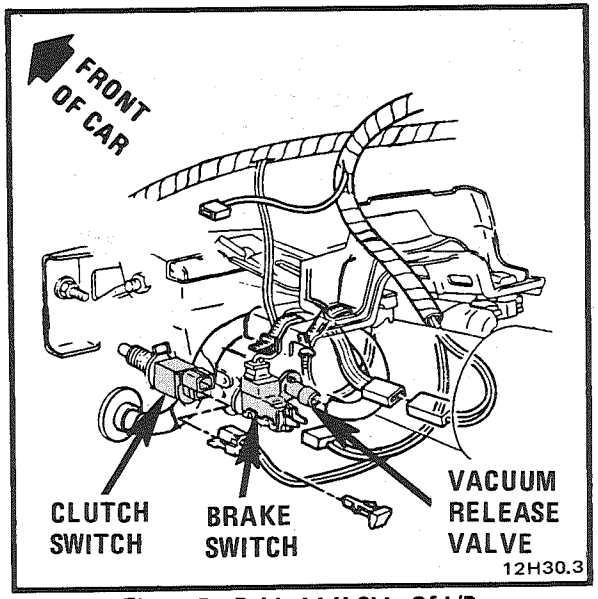


Figure B - Behind LH Side Of I/P

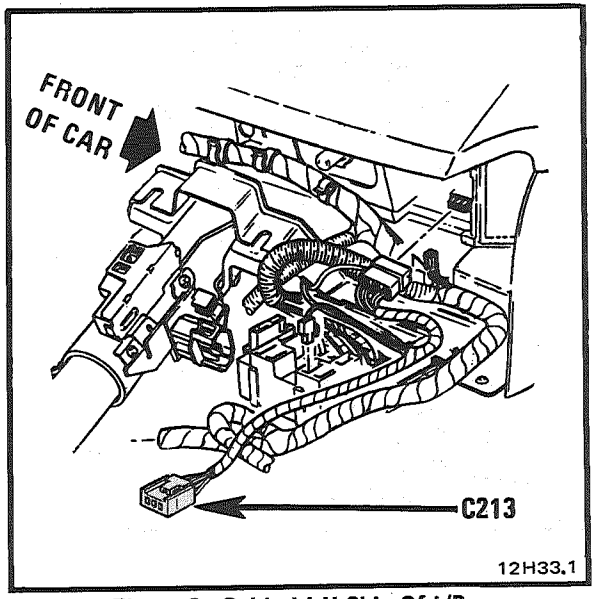


Figure C - Behind LH Side Of I/P

COMPONENT LOCATION VIEWS

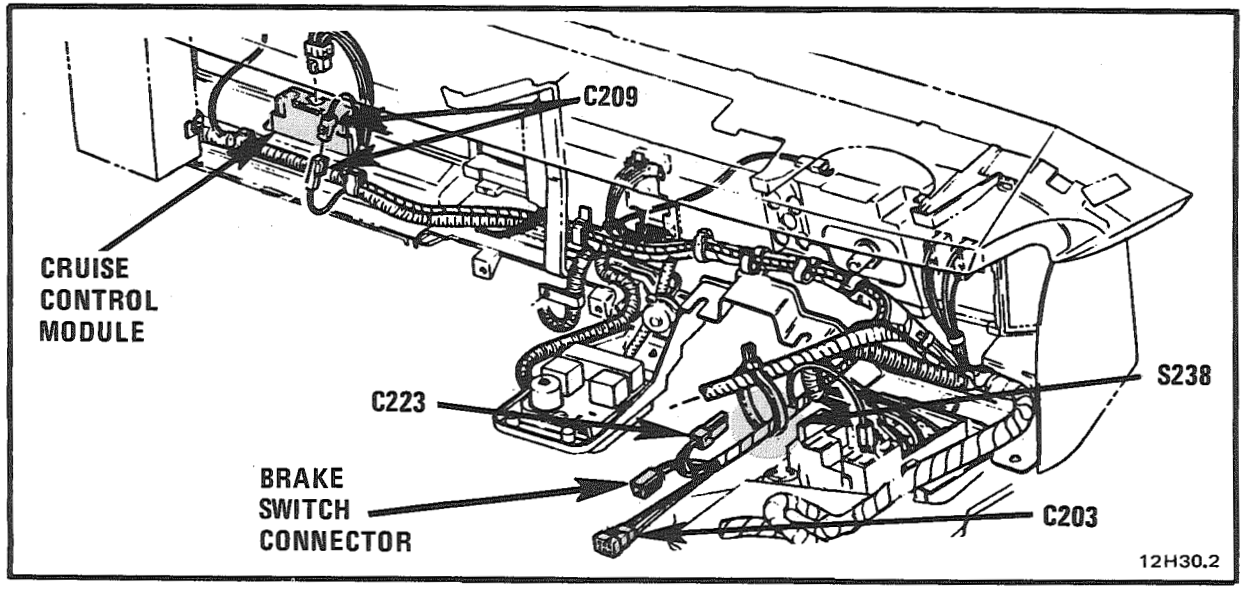


Figure A - Behind I/P

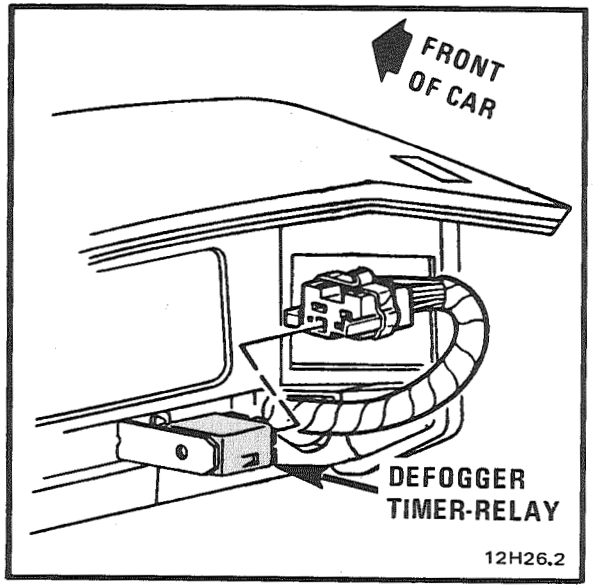


Figure D - Behind RH Side Of I/P

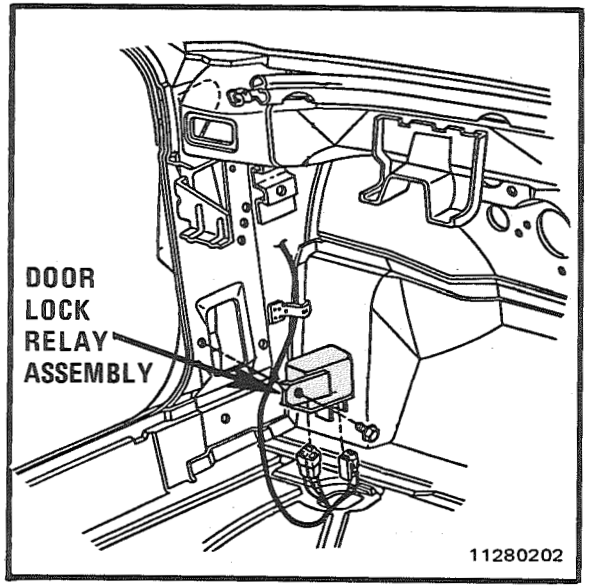


Figure B - LH Shroud

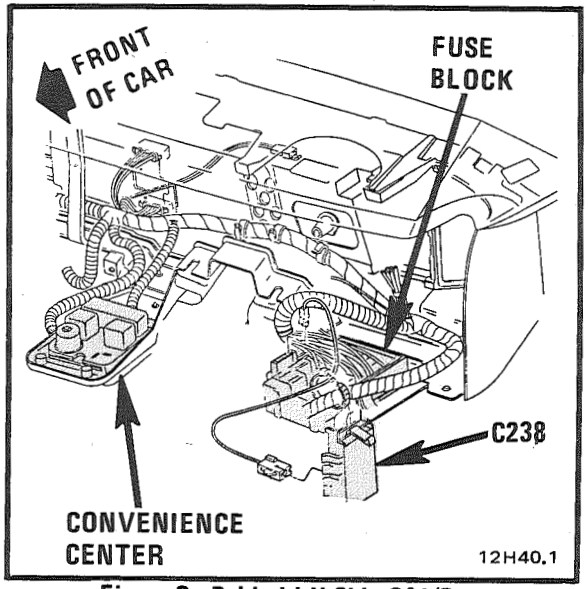


Figure C - Behind LH Side Of I/P

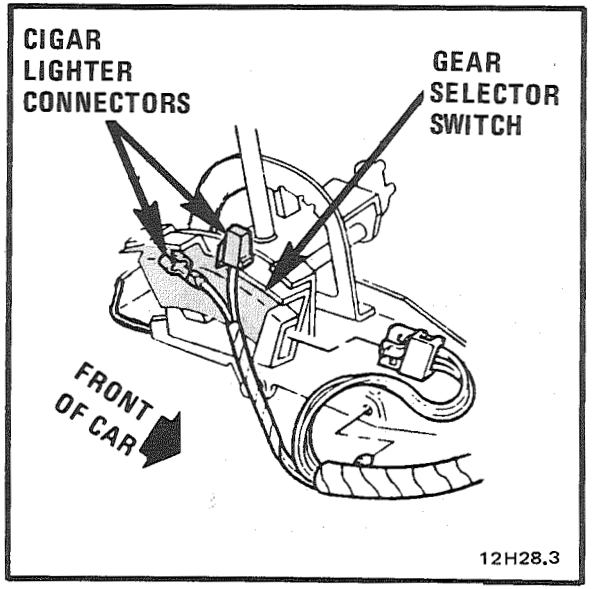


Figure E - Below Front Of Console

COMPONENT LOCATION VIEWS

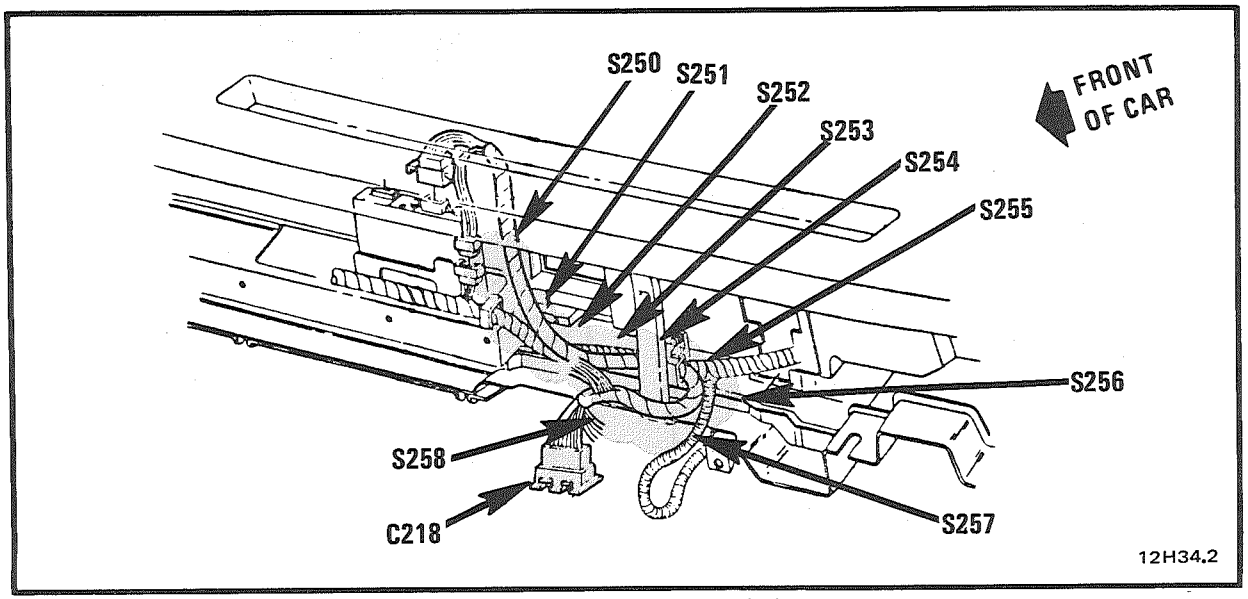


Figure A - Behind Center Of I/P

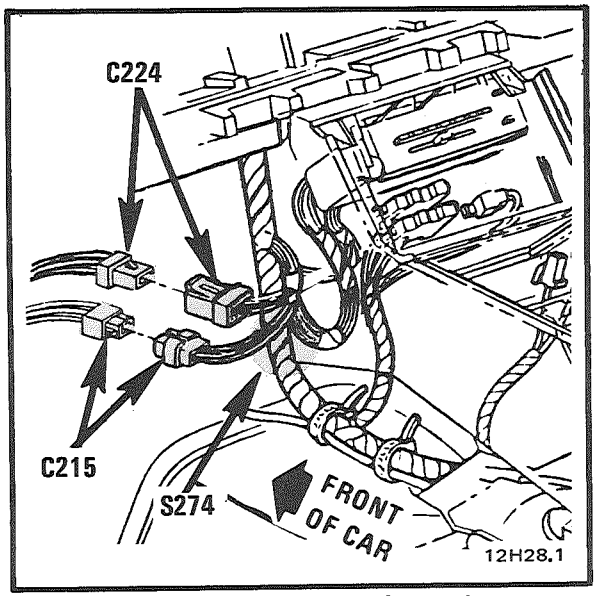


Figure C - Behind Head Of Console

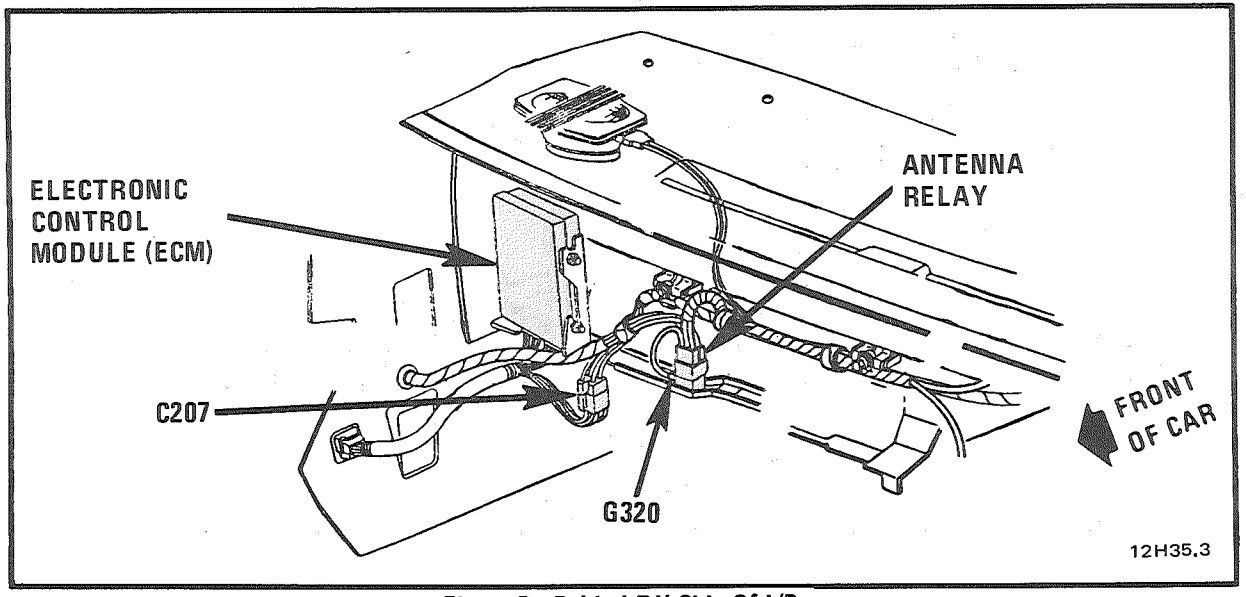


Figure B - Behind RH Side Of I/P

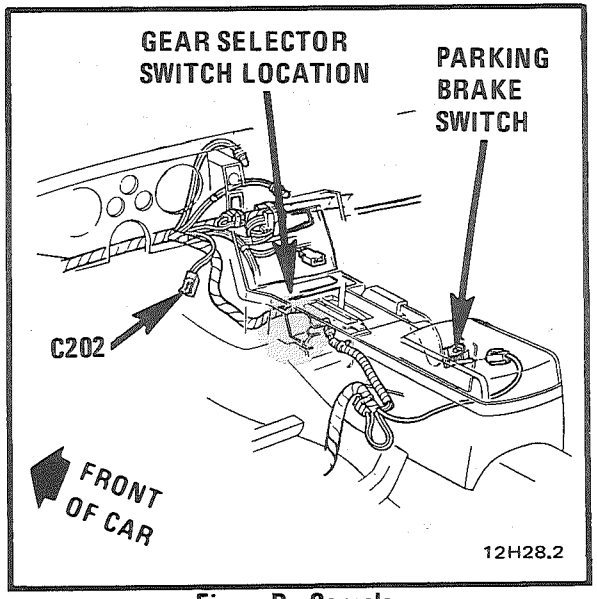


Figure D - Console

COMPONENT LOCATION VIEWS

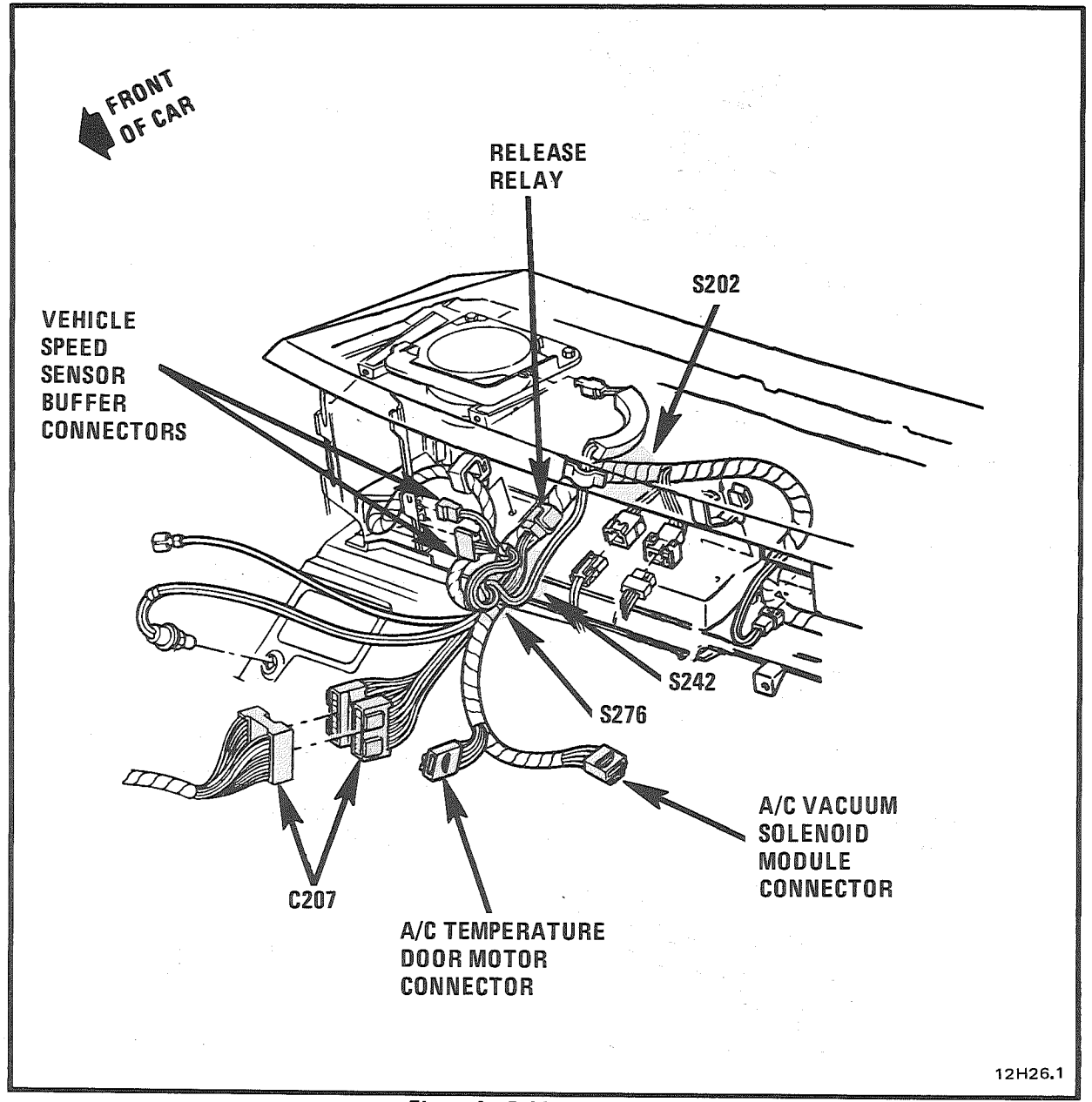


Figure A - Behind RH Side Of I/P

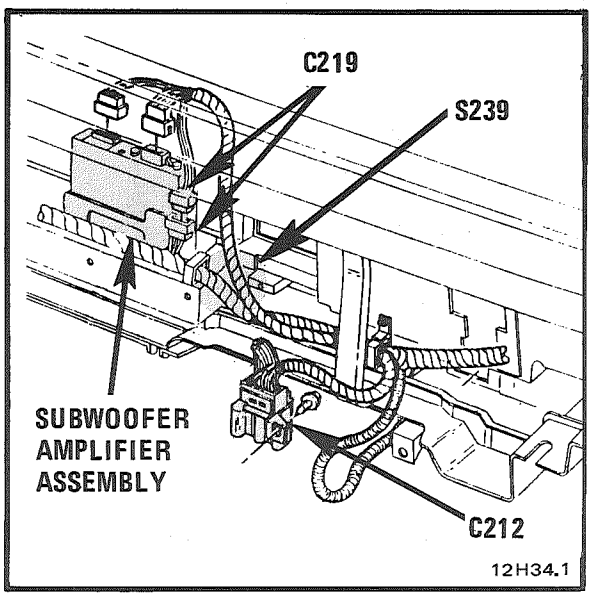


Figure B - Behind Center Of I/P

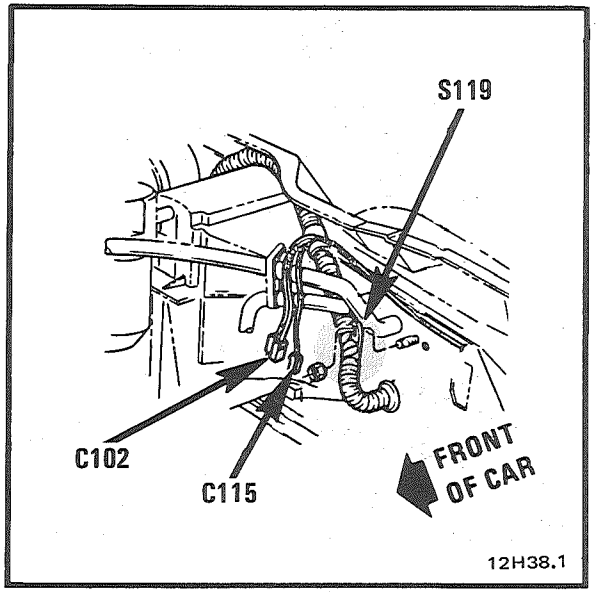


Figure C - RH Rear Corner Of Engine Compartment

COMPONENT LOCATION VIEWS

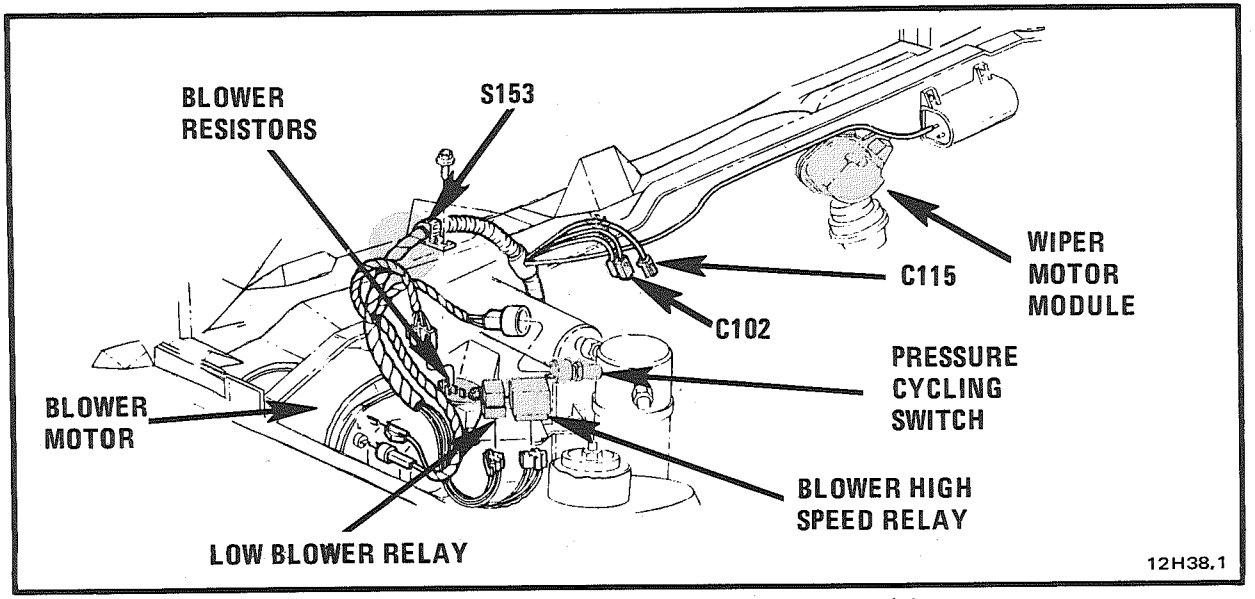


Figure A - RH Front And Center Of Dash (With A/C)

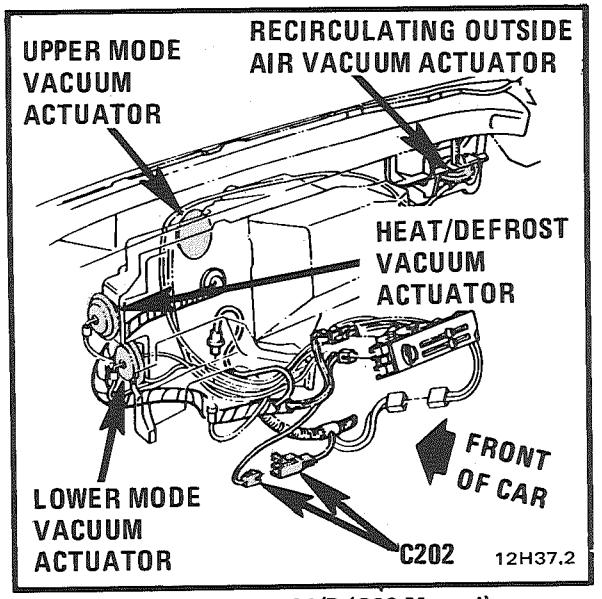


Figure C - Behind I/P (C60 Manual)

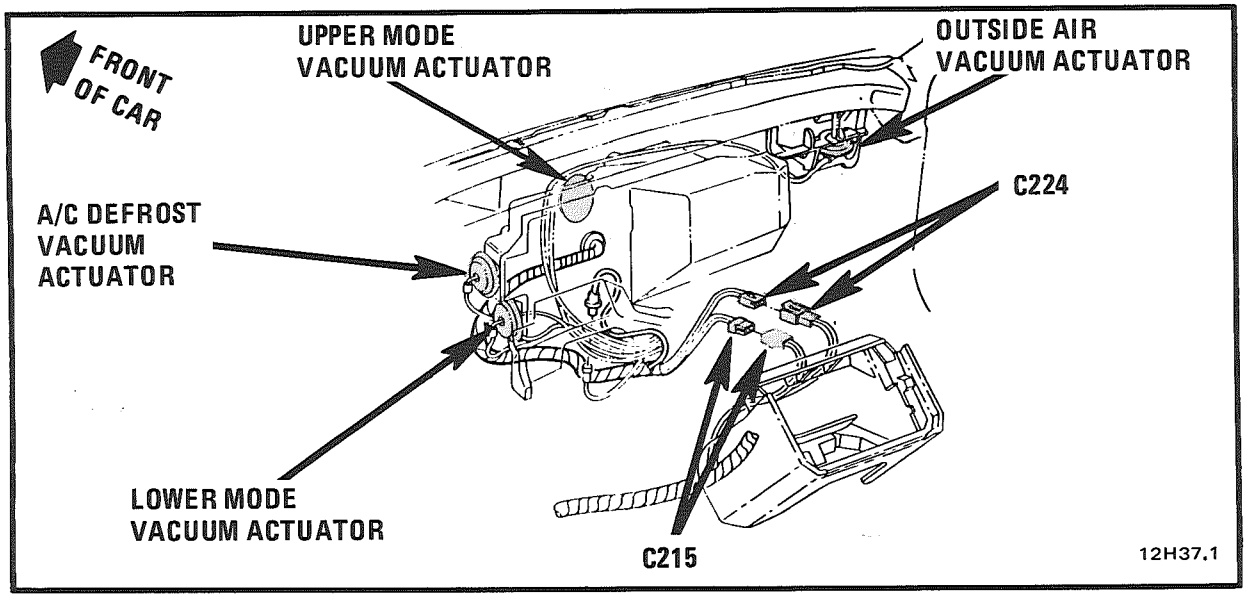


Figure B - Behind I/P (C67 Electronic)

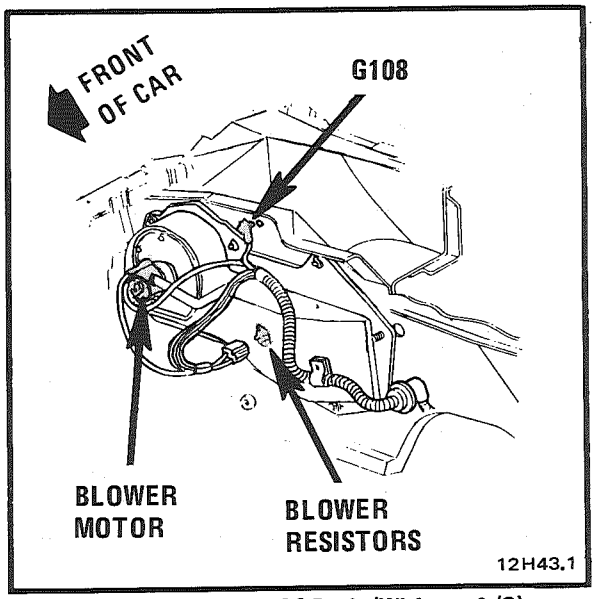


Figure D - RH Front Of Dash (Without A/C)

COMPONENT LOCATION VIEWS

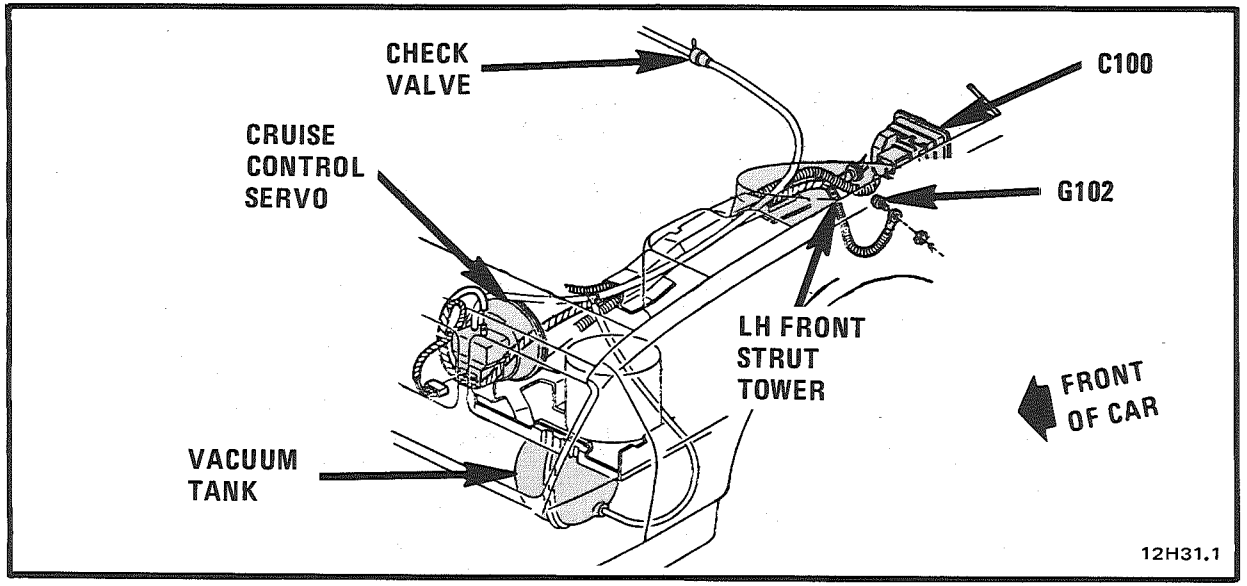


Figure A - LH Side Of Engine Compartment

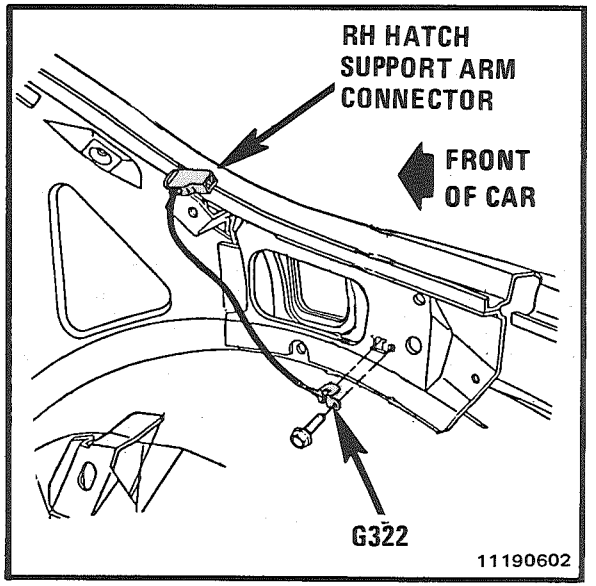


Figure D - RH Side Of Cargo Compartment

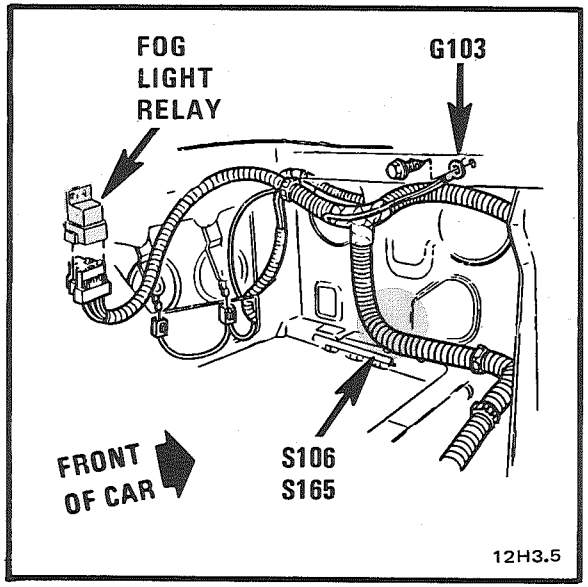


Figure B - LH Front Corner Of Engine Compartment

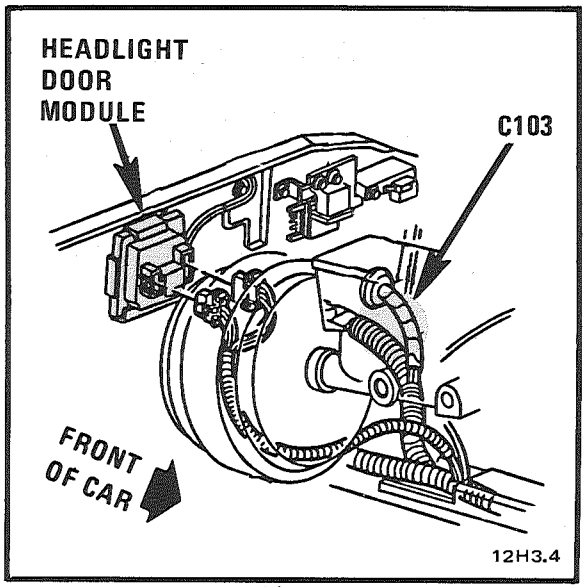


Figure C - LH Rear Corner Of Engine Compartment

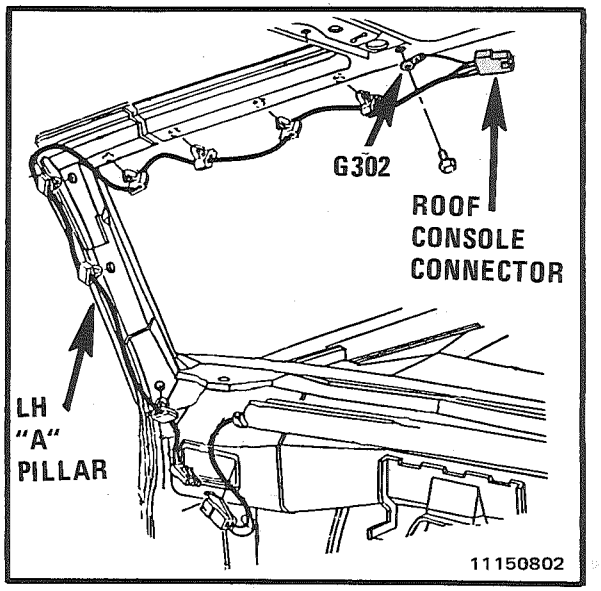


Figure E - LH Side Of Windshield Header

COMPONENT LOCATION VIEWS

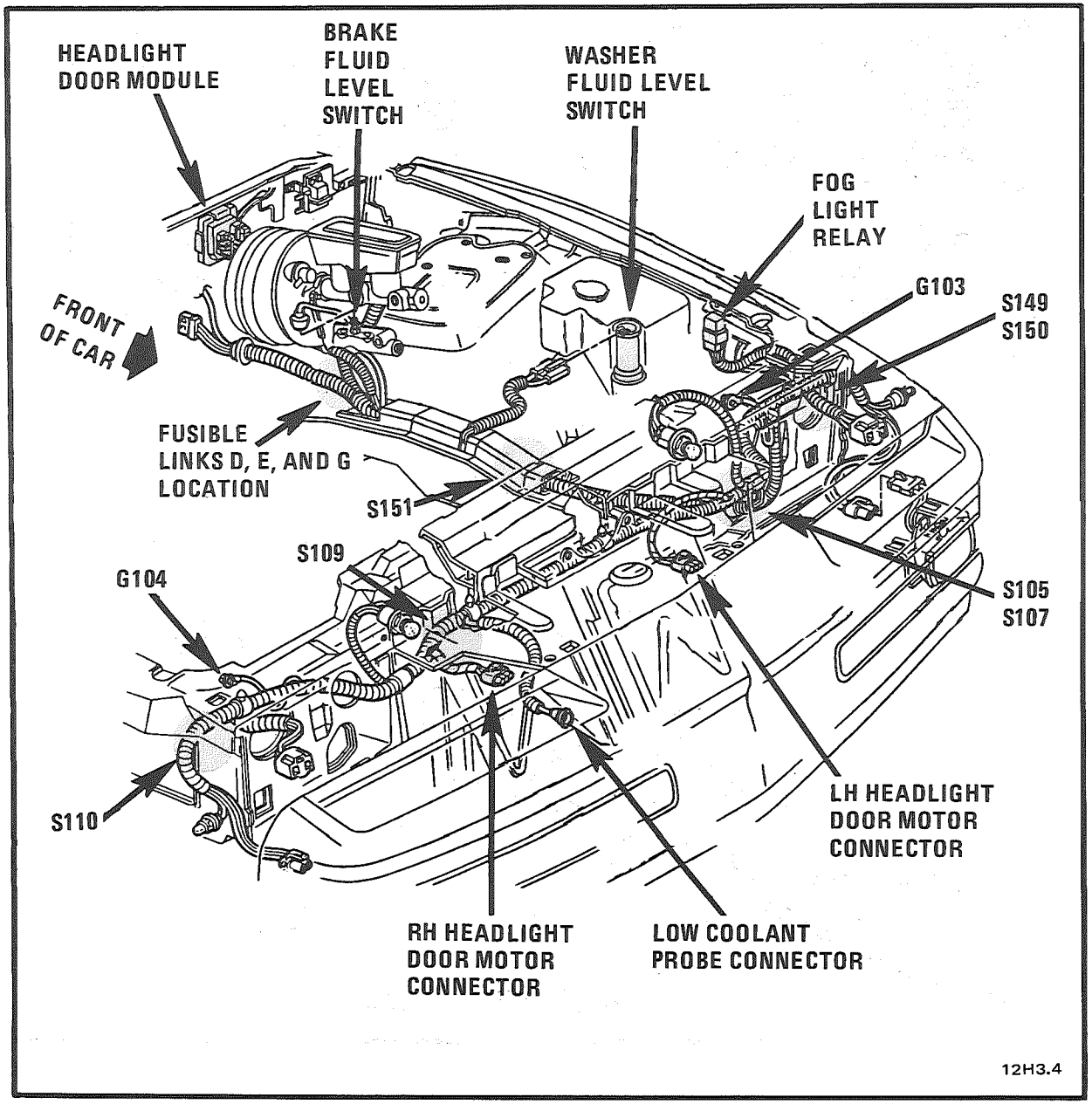


Figure A - Engine Compartment

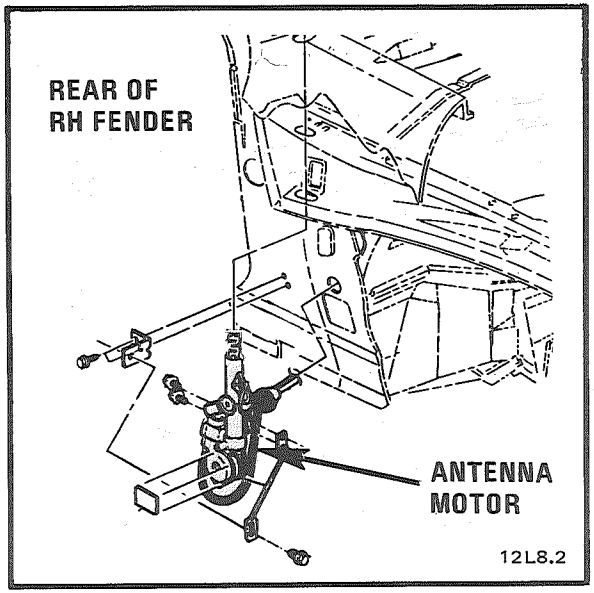


Figure B - Behind RH Front Wheel Well

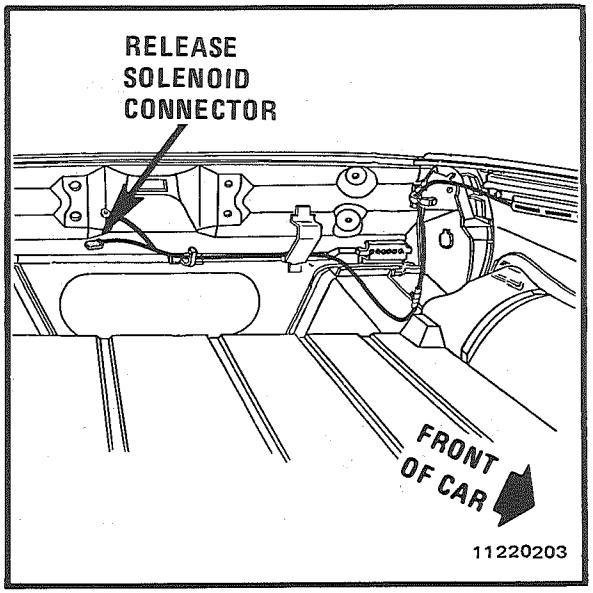


Figure C - LH Rear Corner Of Cargo Compartment

COMPONENT LOCATION VIEWS

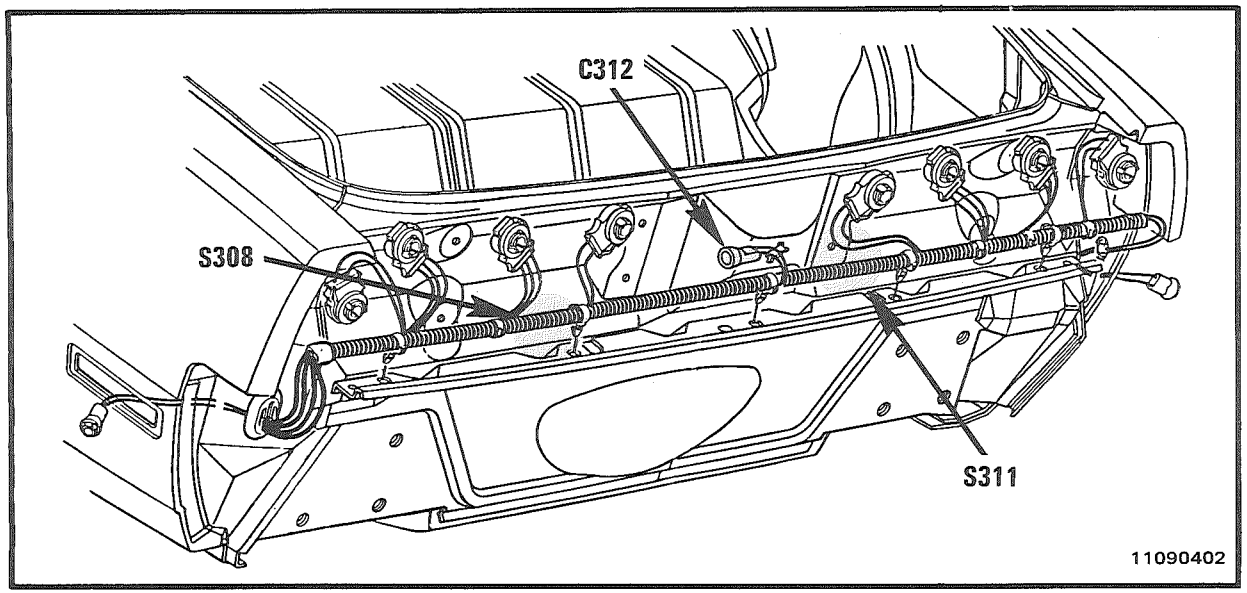


Figure A - Rear Of Car

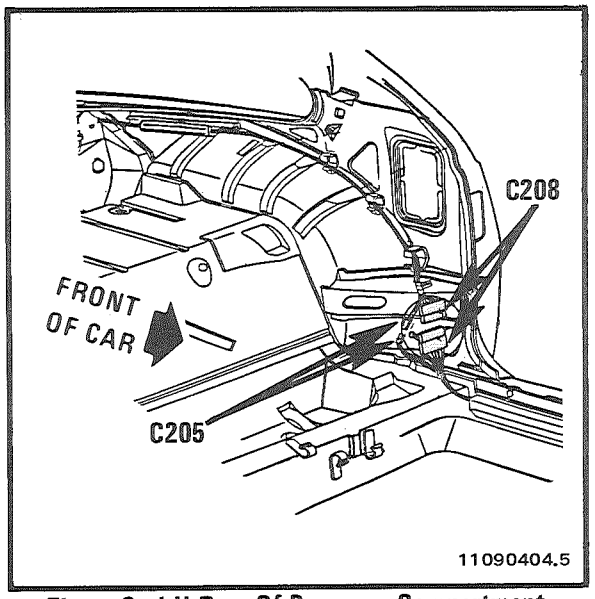


Figure C - LH Rear Of Passenger Compartment

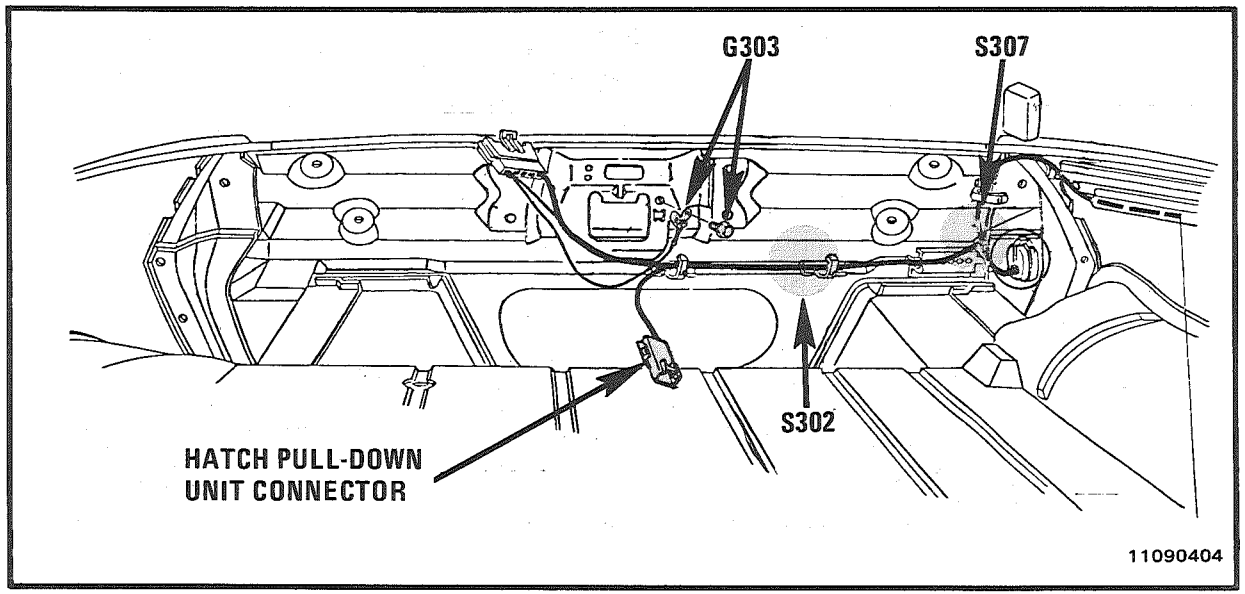


Figure B - Rear Of Cargo Compartment

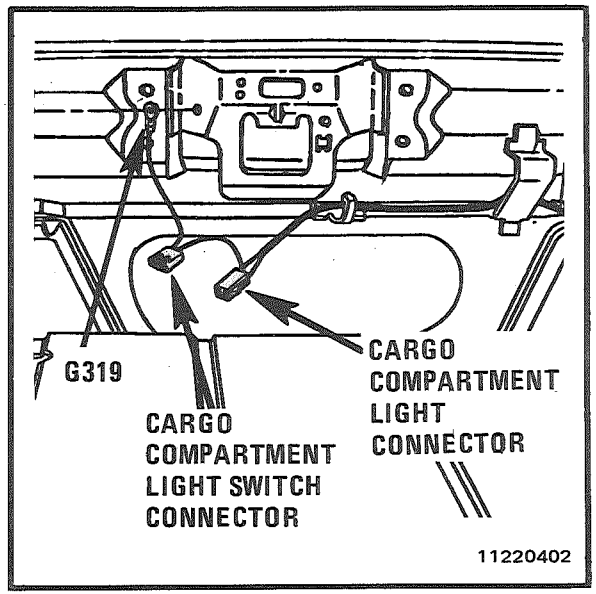


Figure D - Center Of End Panel, In Trunk

COMPONENT LOCATION VIEWS

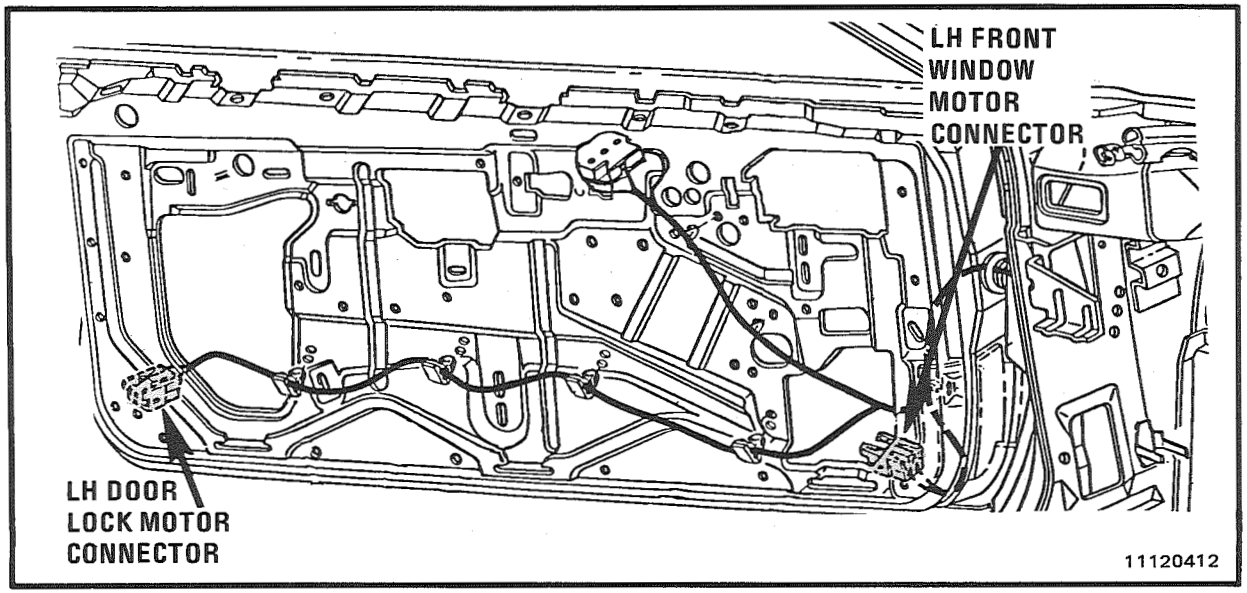
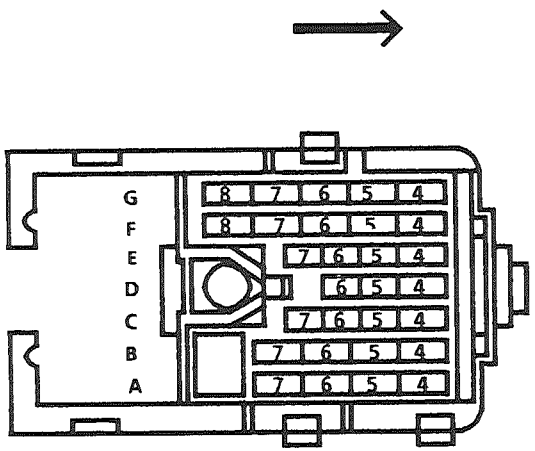


Figure A - LH Door (RH Similar)

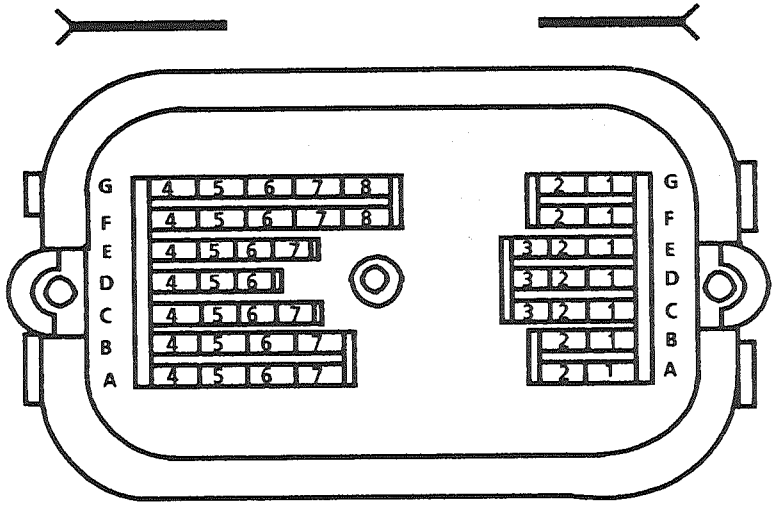
BLANK

HARNESS CONNECTOR FACES

BULKHEAD CONNECTOR, C100

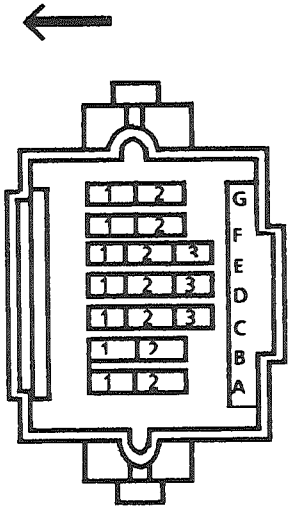


ENGINE HARNESS CONNECTOR
(REMOVED FROM C100)



C100 TERMINAL VIEW
(AS MOUNTED ON COWL)

V42000.0



FRONT LIGHT HARNESS CONNECTOR
(REMOVED FROM C100)

HARNESS CONNECTOR FACES

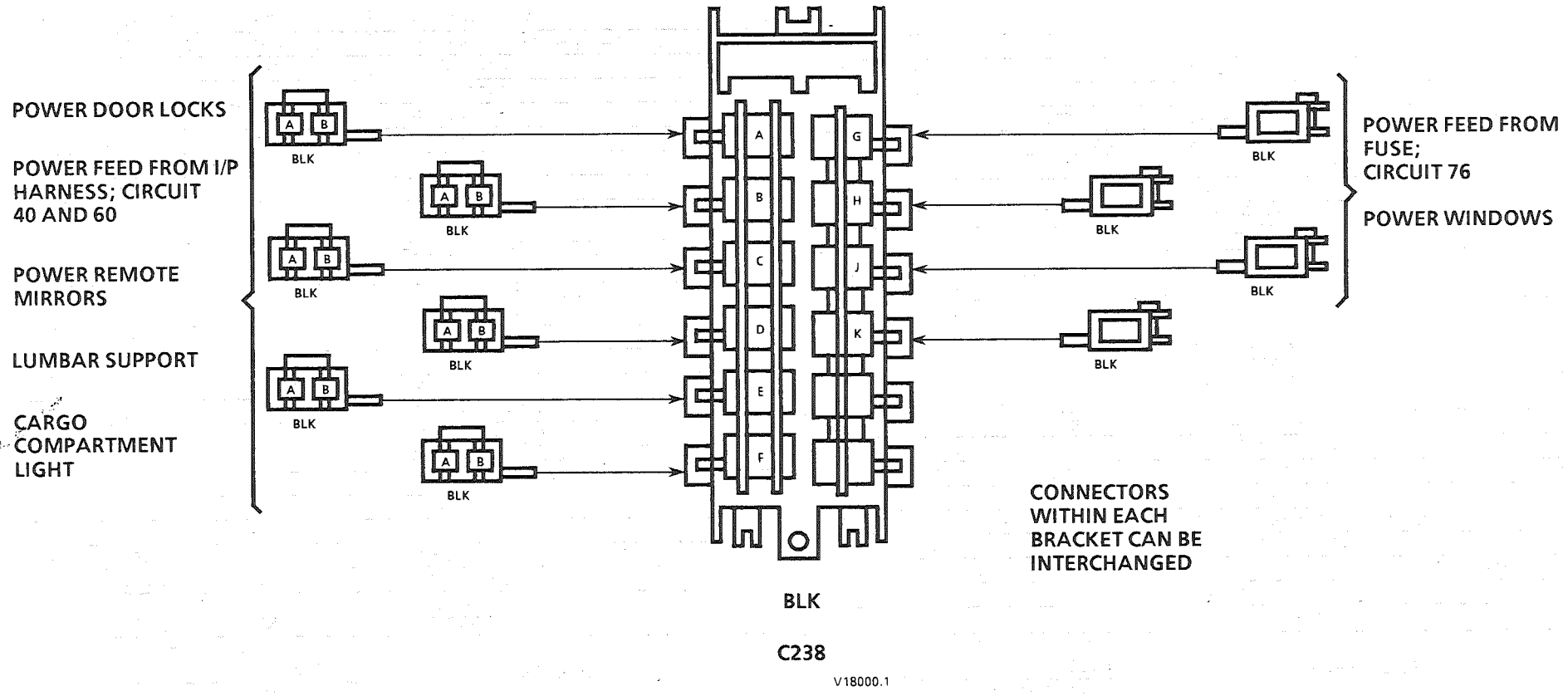
BULKHEAD CONNECTOR, C100

CAVITY	WIRE COLOR		SCHEMATIC
	PIN HALF	SOCKET HALF	
A1	RED	RED	Power Distribution (Headlight Door/Fog Lights)
A2	DK GRN/WHT	DK GRN/WHT	Headlights (Hi Beams)
A4	RED	RED	Power Distribution (Ignition Switch)
A5	—	—	Not Used
A6	—	—	Not Used
A7	PNK/BLK	PNK/BLK	Idle Speed Control (V8 VIN E)
B1	BRN	BRN	Lights: Park/Front Marker
B2	TAN/WHT	TAN/WHT	Brake Warning System
B4	PPL	PPL	Starting System (Starter Interlock)
B5	DK BLU	DK BLU	Back Up Lights
B6	—	—	Not Used
B7	—	—	Not Used
C1	YEL/BLK	YEL/BLK	Low Coolant Probe (Driver Information Center [DIC])
C2	PPL	PPL	Lights: Park/Turn (LH Front with Lamp Monitor
C3	BLK/WHT	BLK/WHT	Washer Fluid Level (Driver Information Center [DIC])
C4	LT GRN	LT GRN	Back Up Lights
C5	PPL	PPL	Wiper/Washer
C6	DK GRN	DK GRN	Wiper/Washer
C7	PNK	PNK	Wiper/Washer
D1	WHT	WHT	Headlight Doors
D2	YEL	YEL	Headlight Doors
D3	TAN/WHT	TAN/WHT	Headlights (LO Beam, with Lamp Monitor)
D4	YEL (V6 VIN S), PNK/BLK (V8 VIN E) (V8 VIN F) (V8 VIN 8)	YEL	Vehicle Speed Sensor
D5	GRY	GRY	Wiper/Washer
D6	WHT (V8 VIN E) (V8 VIN F) (V8 VIN 8), BLK/WHT (V6 VIN S)	WHT	Tachometer

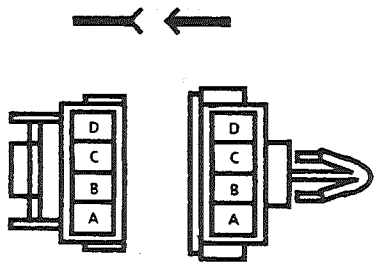
CAVITY	WIRE COLOR		SCHEMATICS
	PIN HALF	SOCKET HALF	
E1	LT GRN/BLK	LT GRN/BLK	Headlights (Hi Beams)
E2	—	—	Not Used
E3	BRN/WHT	BRN/WHT	Lights: Park/Turn (RH Front, with Lamp Monitor)
E4	PPL (V6 VIN S)	PPL	Vehicle Speed Sensor
E5	TAN	TAN	Engine Oil Pressure (Instrument Panel)
E6	RED	RED	Fuel Pump Relay
E7	PPL	PPL	Automatic Transmission
F1	YEL/BLK	YEL/BLK	Headlights (LO Beams, with Lamp Monitor)
F2	DK BLU	DK BLU	Lights: Turn (RH Front)
F4	PNK/BLK (V6 VIN S), PNK (V8 VIN E) (V8 VIN F) (V8 VIN 8)	PNK	Power Distribution (Multi-Port Fuel Injection, Throttle Body Injection, Tuned Port Injection)
F5	DK GRN	DK GRN	Coolant Temperature (Instrument Panel)
F6	—	—	Not Used
F7	—	—	Not Used
F8	BRN	BRN	Charging System
G1	DK GRN	DK GRN	Horn
G2	LT BLU	LT BLU	Lights: Turn (LH Front)
G4	TAN/WHT	TAN/WHT	Fuel Tank Unit
G5	RED	RED	Power Distribution (Light Switch, Fuse Block)
G6	—	—	Not Used
G7	—	—	Not Used
G8	—	—	Not Used

HARNESS CONNECTOR FACES

JUNCTION BLOCK, C238

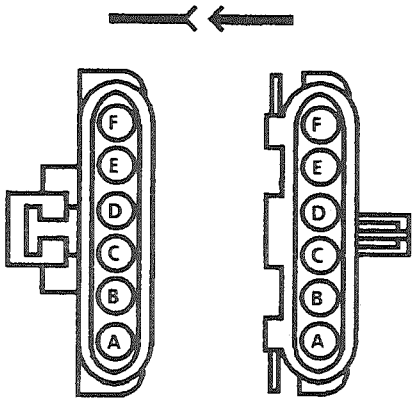


HARNESS CONNECTOR FACES



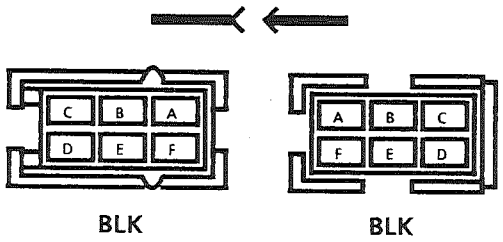
BLK BLK

C102



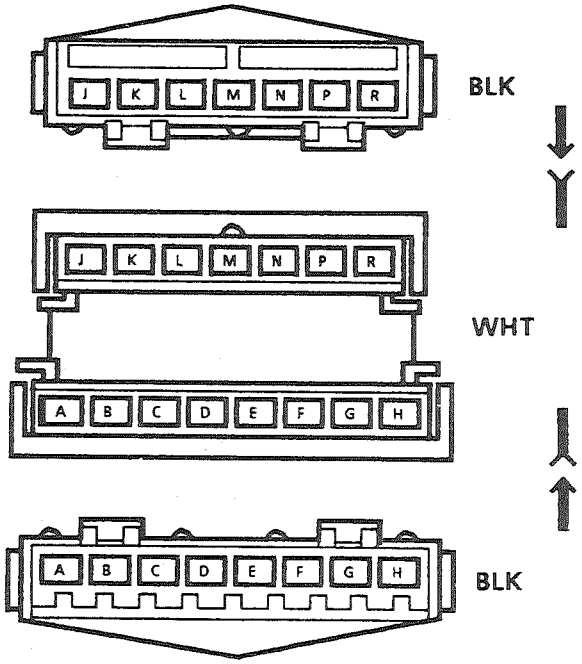
BLK BLK

C104



BLK BLK

C203



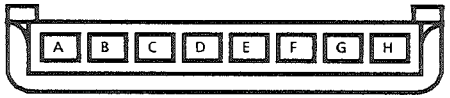
BLK

WHT

BLK

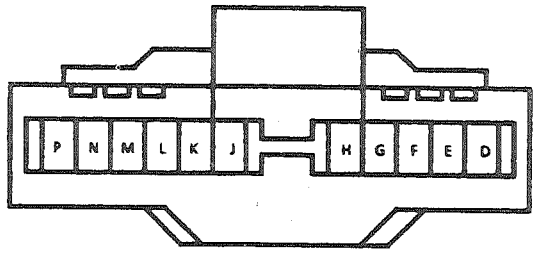
C207

C204, SEE C222



WHT

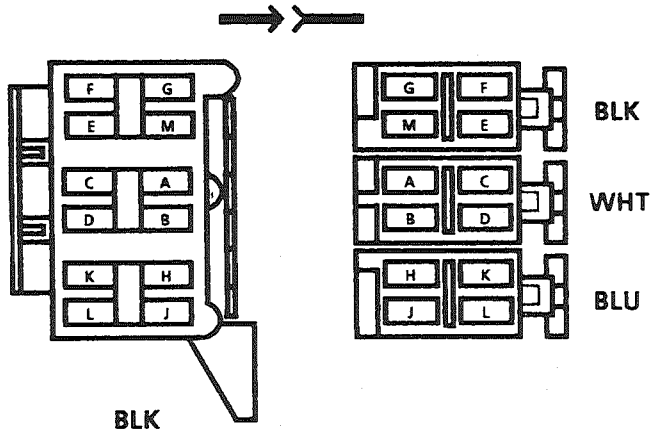
C208



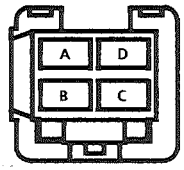
BLK

C210

HARNESS CONNECTOR FACES



C212



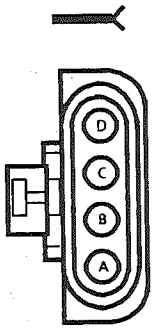
BLK

C223

C217, SEE C4 OF RADIO (WITH UK3)

C218, SEE C2 OF RADIO (WITH UK3)

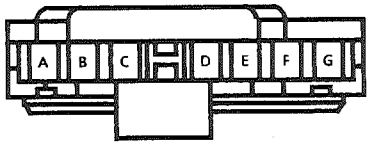
C219, SEE C203



BLK

C222

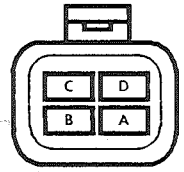
C224, SEE C203



GRY

C240

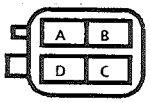
HARNESS CONNECTOR FACES



BLK

C303

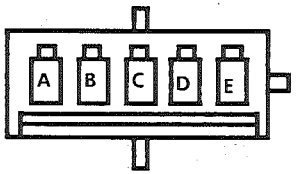
C304, SEE C303



BLK

C331

C332, SEE C331



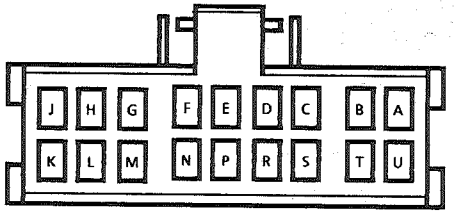
BLK

A/C COMPRESSOR CONTROL RELAY

BLK

A/C CONTROL HEAD (WITH C60)

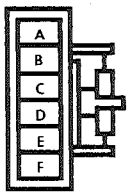
C1 BLK



C2 BLK

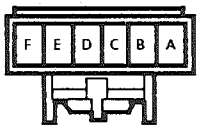
A/C CONTROL HEAD (WITH C67)

HARNESS CONNECTOR FACES



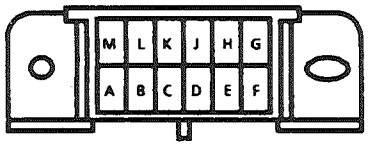
WHT

A/C TEMPERATURE DOOR MOTOR



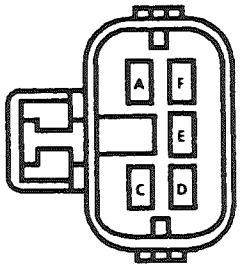
BLK

A/C VACUUM SOLENOID MODULE



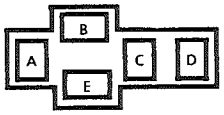
BLK

ASSEMBLY LINE DIAGNOSTIC LINK (ALDL) CONNECTOR



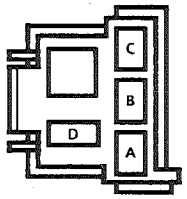
GRY

AUXILIARY COOLANT FAN RELAY



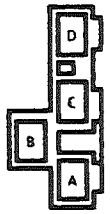
BLK

BLOWER HIGH SPEED RELAY (WITH C67)



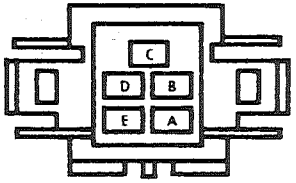
BLK

BLOWER HIGH SPEED RELAY (MANUAL A/C)



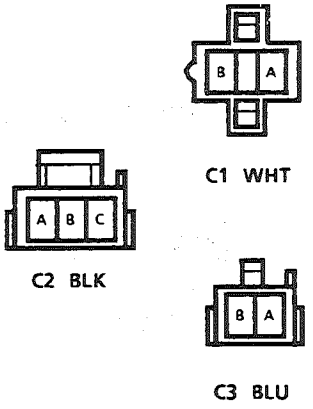
GRY

BLOWER RESISTORS



BLK

BLOWER SWITCH

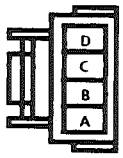


V00240.0

Brake Switch

HARNESS CONNECTOR FACES

BURN-OFF RELAY, SEE AUXILIARY COOLANT FAN RELAY

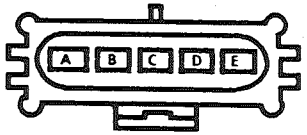


BLK

CLUTCH START SWITCH

V00491.1

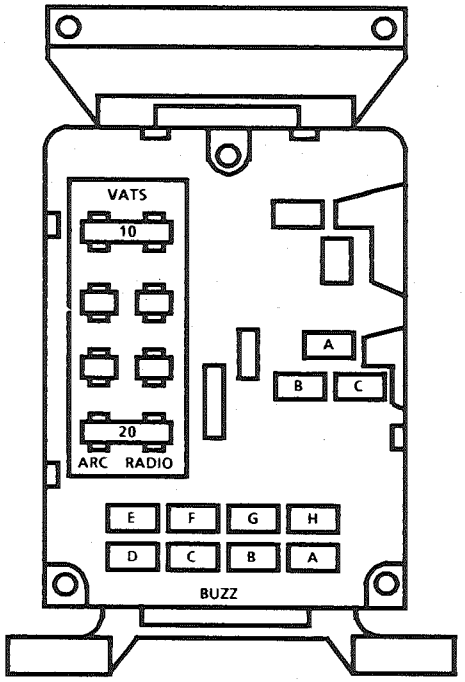
COOLANT FAN RELAY, SEE AUXILIARY COOLANT FAN RELAY



GRY

CRUISE CONTROL SERVO

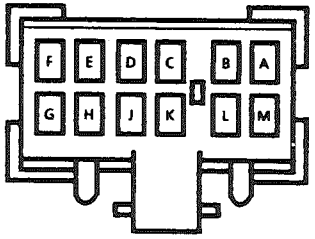
V00459.0



BLK

CONVENIENCE CENTER

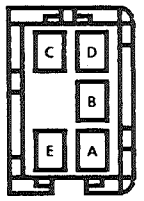
V00275.1



WHT

CRUISE CONTROL MODULE

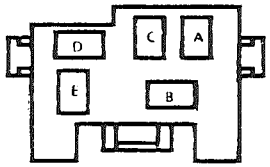
V00286.0



WHT

DEFOGGER CONTROL

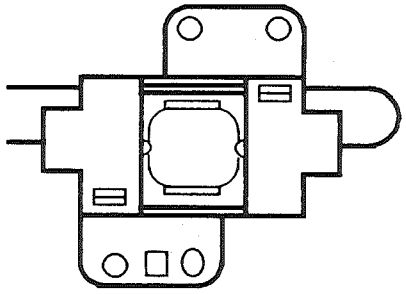
V00569.0



BLK

DEFOGGER TIMER RELAY

V00561.0

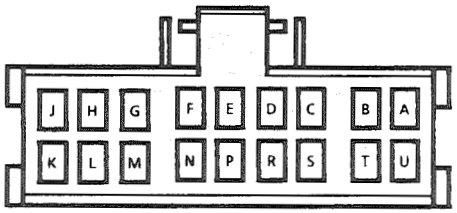


WHT

DOME LIGHT

V00570.0

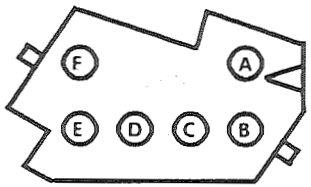
HARNESS CONNECTOR FACES



BLK

DRIVER INFORMATION CENTER (DIC)

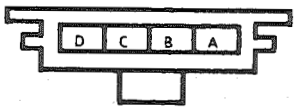
V00297.4



BLK

DRIVER'S LUMBAR CONTROL SWITCH

V00545.1

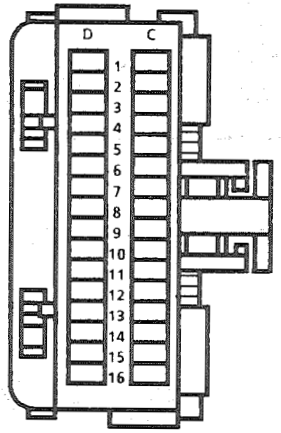


WHT

DRIVER'S LUMBAR VALVE ASSEMBLY

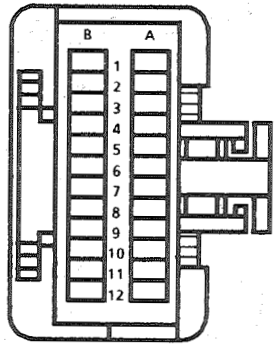
V00123.0

12045575



C2 BLK

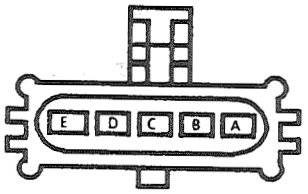
12047946



C1 BLK

ELECTRONIC CONTROL MODULE (ECM)

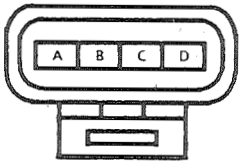
V00005.0



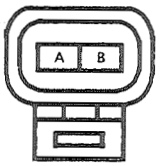
BLK

ELECTRONIC SPARK CONTROL (ESC) MODULE

V00456.0



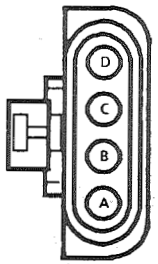
C1 BLK



C2 BLK

ELECTRONIC SPARK TIMING (EST) DISTRIBUTOR

V00328.0



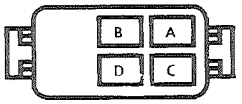
BLK

ELECTRONIC VACUUM REGULATOR VALVE (EVRV) (V6 VIN S)

V04016.2

HARNESS CONNECTOR FACES

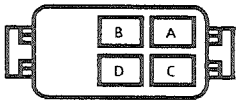
FOG LIGHT SWITCH,
SEE DEFOGGER CONTROL



WHT

FRONT POWER WINDOW
SWITCH (LH)

V00487.1

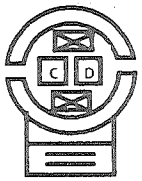


BLU

FRONT POWER
WINDOW SWITCH (RH)

V00571.0

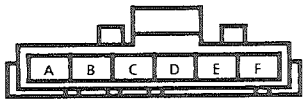
FUEL PUMP RELAY, SEE A/C
COMPRESSOR CONTROL RELAY



BRN

FUEL PUMP SWITCH
(V8 VIN F) (V8 VIN 8)

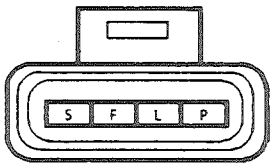
V00249.0



BLK

GEAR SELECTOR SWITCH

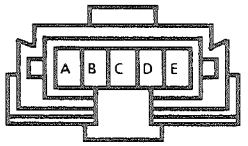
V00541.1



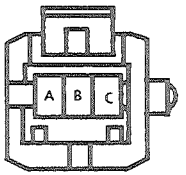
BLK

GENERATOR

V00176.0



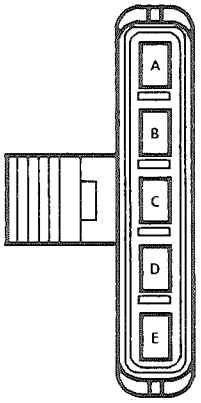
C1 BLK



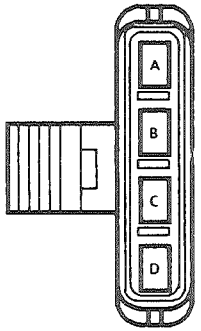
C2 BLK

HATCH CONTACT ASSEMBLY

V00235.0



C1 BLK

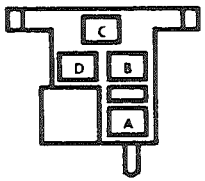


C2 BLK

HEADLIGHT DOOR MODULE

V00512.0

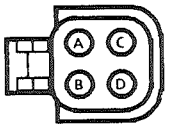
HARNESS CONNECTOR FACES



BLK

HEADLIGHT DIMMER SWITCH

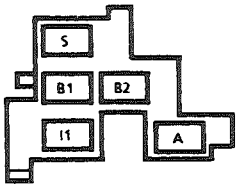
V00285.0



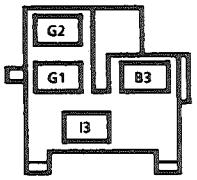
BLK

IDLE AIR CONTROL
STEPPER MOTOR

V00083.3



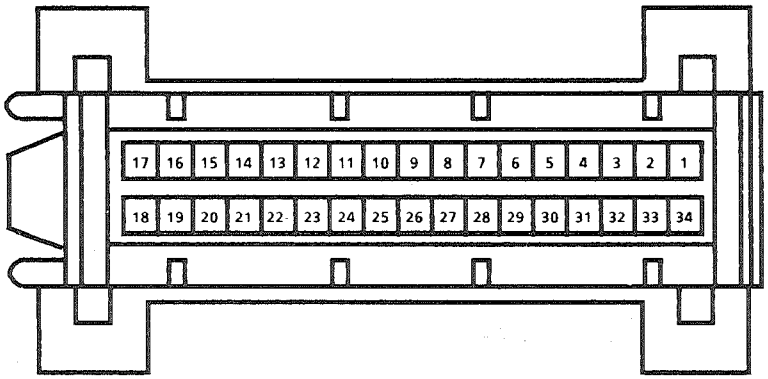
C2 BLU



C1 BLK

IGNITION SWITCH

V00032.0



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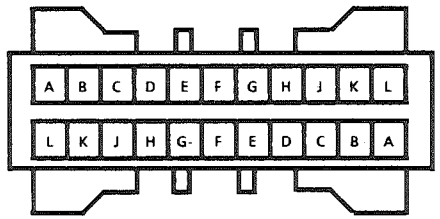


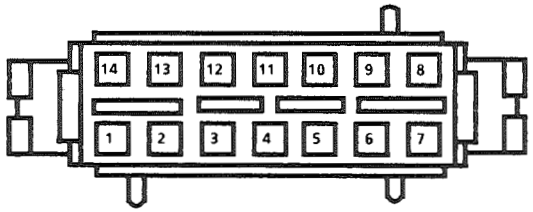
C3 WHT

C1 WHT

INSTRUMENT PANEL (DIGITAL CLUSTER)

V00319.0

HARNESS CONNECTOR FACES



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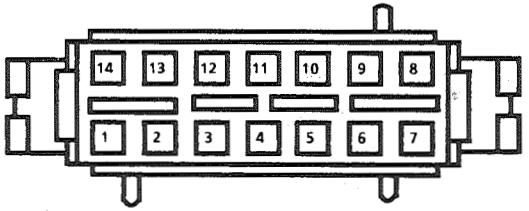
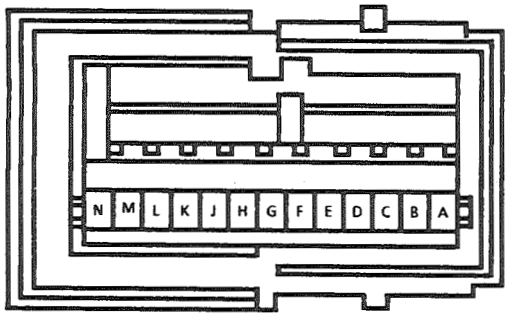


C2 GRY

INSTRUMENT PANEL
(WITHOUT DIGITAL CLUSTER)

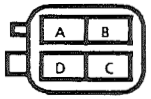
V00324.1



BLK

LIGHTS MONITORING MODULE

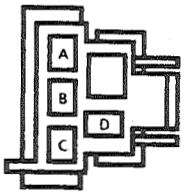
V00572.0



BLK

LUMBAR PUMP/MOTOR

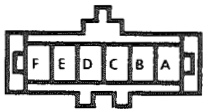
V00122.0



BLK

LOW BLOWER RELAY

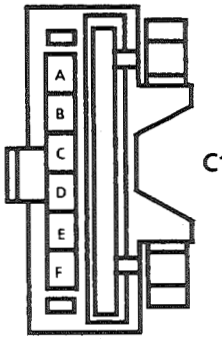
V00573.0



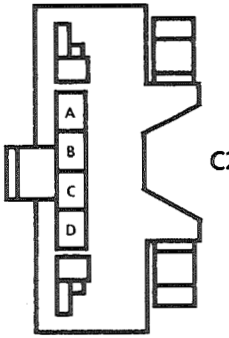
BLK

LUMBAR PUMP/MOTOR
RELAY

V00137.2



C1 WHT

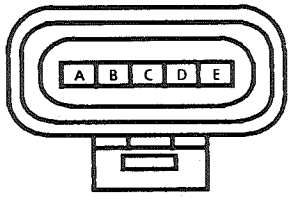


C2 WHT

LIGHT SWITCH

V00326.0

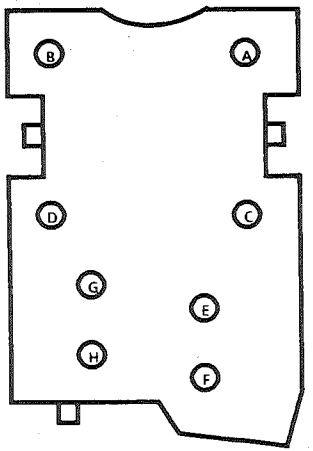
HARNESS CONNECTOR FACES



BLK

MASS AIR FLOW SENSOR
(V8 VIN F) (V8 VIN 8)

V00526.2



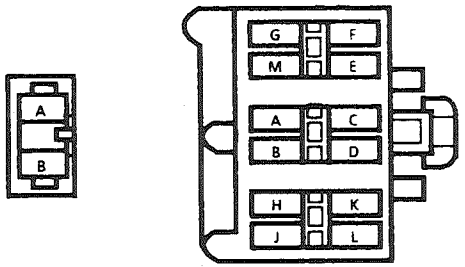
WHT

OUTSIDE MIRROR SWITCH

V00184.2

PASSENGER'S LUMBAR CONTROL SWITCH,
SEE DRIVER'S LUMBAR CONTROL SWITCH

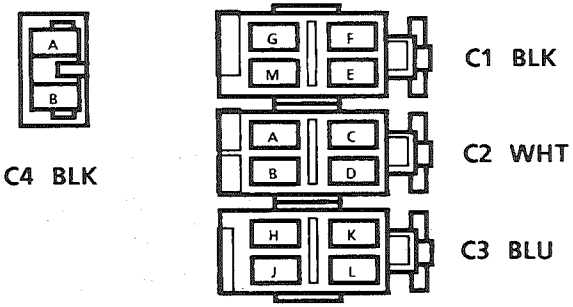
PASSENGER'S LUMBAR VALVE ASSEMBLY,
SEE DRIVER'S LUMBAR VALVE ASSEMBLY



C2 BLK C1 GRY

RADIO (WITH SUBWOOFER)

V00320.0



C4 BLK

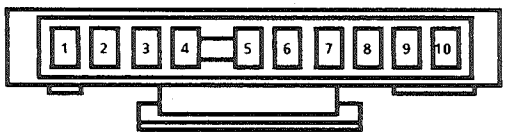
C1 BLK

C2 WHT

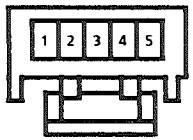
C3 BLU

RADIO (WITHOUT SUBWOOFER AND UK3)

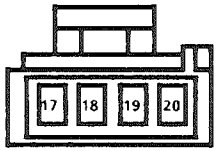
V00236.1



C2 BLK
(C218 WITH UK3 AND SUBWOOFER)



C3 GRY

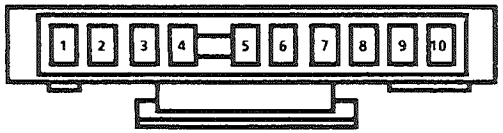


C4 BLU
(C217 WITH UK3 AND SUBWOOFER)

RADIO
(WITH UK3)

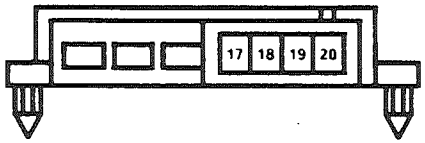
V00578.0

HARNESS CONNECTOR FACES



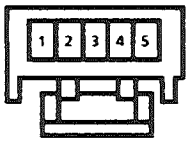
C1 BLK

12047530



C2 BLU

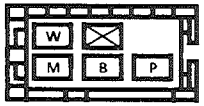
12066172



C3 GRY

RADIO
(WITH UK3 AND SUBWOOFER)

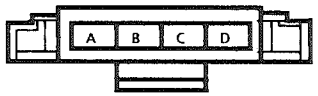
V00579.0



GRY

RELEASE SWITCH

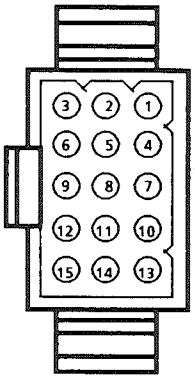
V00574.0



WHT

REMOTE DIMMER

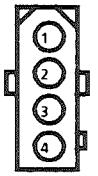
V00472.1



WHT

SUBWOOFER AMPLIFIER
ASSEMBLY

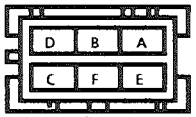
V00576.0



WHT

ROOF CONSOLE

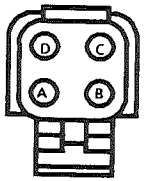
V00575.0



BLK

SUBWOOFER SWITCH

V00577.0

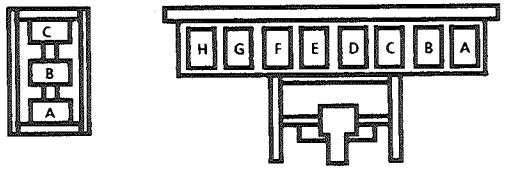


WHT

TRANSMISSION
CONVERTER CLUTCH

V04017.2

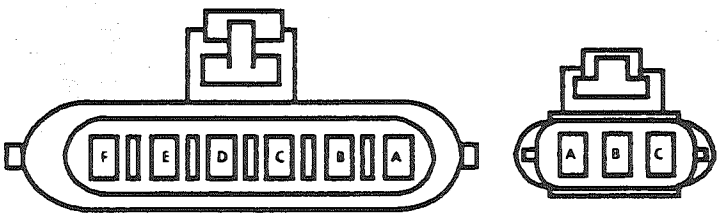
HARNESS CONNECTOR FACES



C1 BLK C2 BLK

VEHICLE SPEED SENSOR BUFFER

V00325.0



C1 BLK C2 BLK

WIPER MOTOR MODULE

V00409.1

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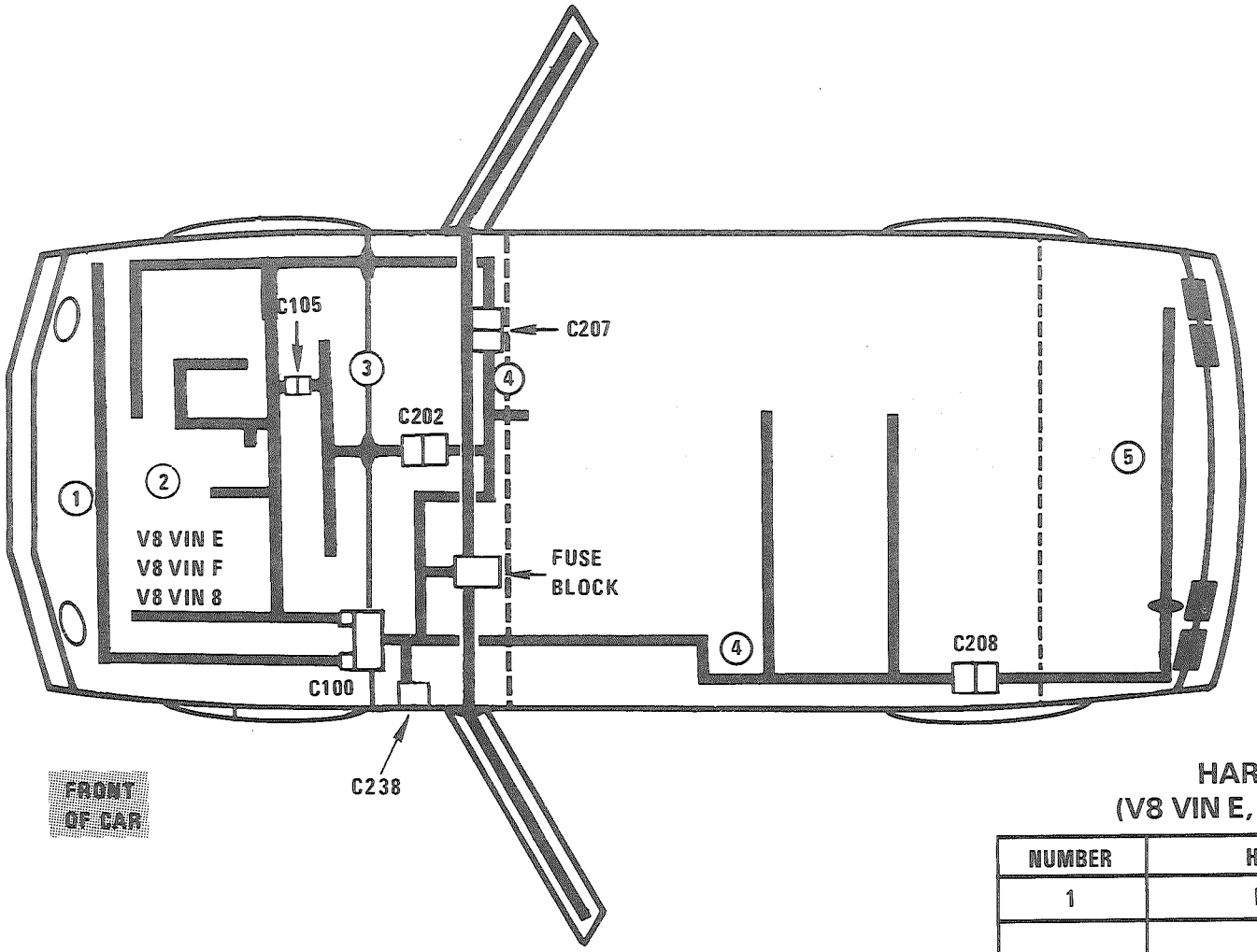
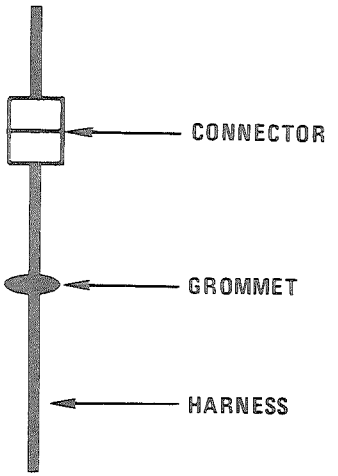
HARNESS ROUTING VIEWS: V8 VIN E, V8 VIN F, V8 VIN 8



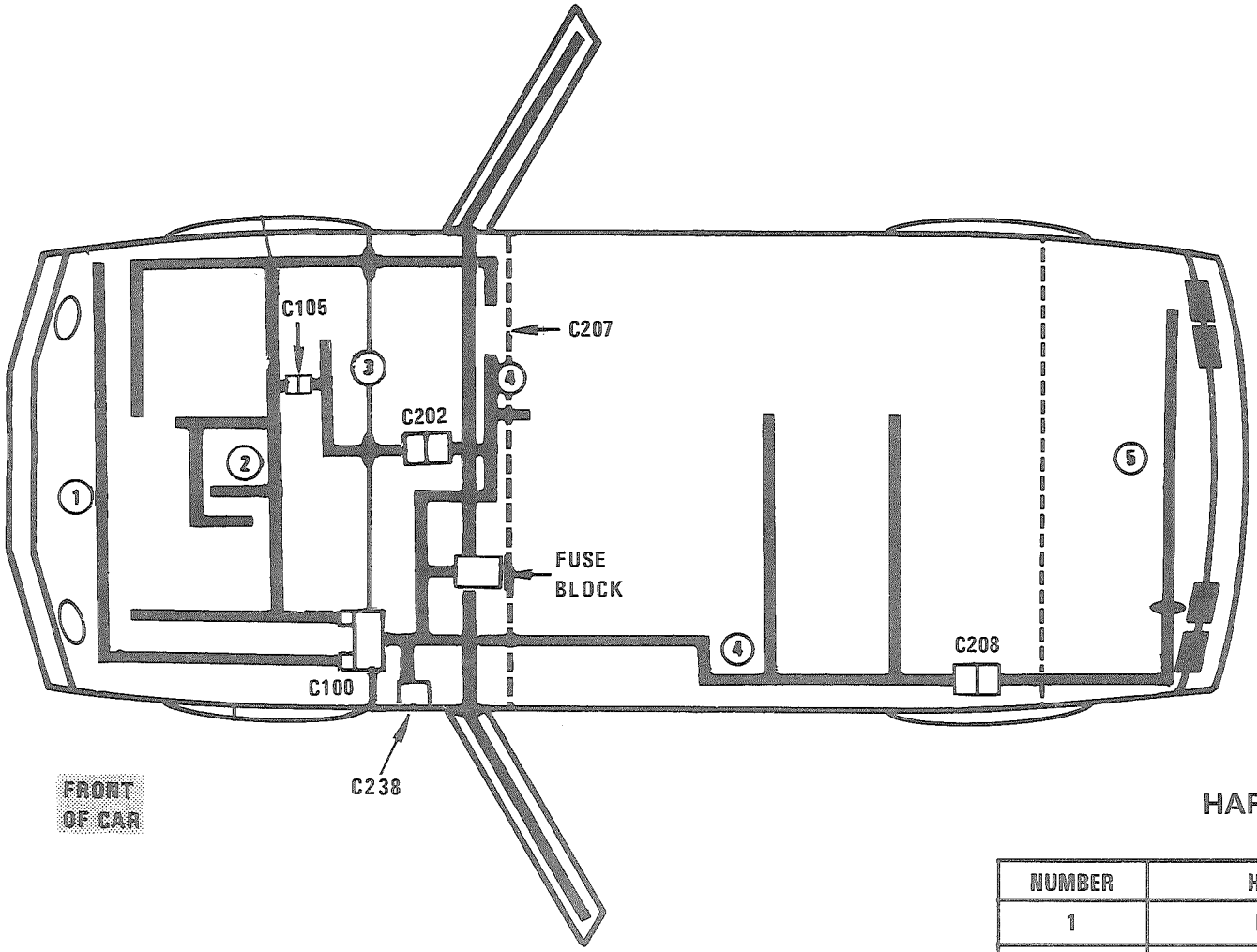
SYMBOLS



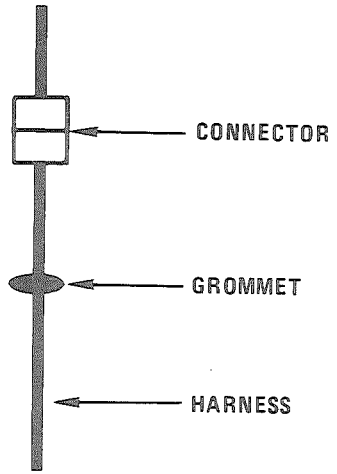
HARNESS CHART
(V8 VIN E, V8 VIN F, V8 VIN 8)

NUMBER	HARNESS NAME	PAGE-FIGURE
1	FRONT LIGHTS	201-16-A
2	ENGINE	(VIN E) 201-2-A (VIN F) (VIN 8) 201-5-A
3	AIR CONDITIONING	201-14-A
4	INSTRUMENT PANEL	201-11-A
5	REAR LIGHTS	201-17-A

HARNESS ROUTING VIEWS: V6 VIN S



SYMBOLS



HARNESS CHART
(V6 VIN S)

NUMBER	HARNESS NAME	PAGE-FIGURE
1	FRONT LIGHTS	201-16-A
2	ENGINE	201-0-A 201-1-A
3	AIR CONDITIONING	201-14-A
4	INSTRUMENT PANEL	201-11-A
5	REAR LIGHTS	201-17-A

SECTION 8B

LIGHTING SYSTEMS AND HORNS

CONTENTS

The following information, previously shown in this section, has been moved to the sections shown.

GENERAL DESCRIPTION

EXTERIOR LIGHTS

The exterior lighting system includes the headlights (and headlight motors to raise or lower the headlights), front parking/turn signal lights, front cornering lights, fog lights, rear tail/stop/turn signal lights, back-up lights, license plate lights, center high-mounted stoplight, and the underhood light; it also includes all associated wiring, controls and related hardware for these lights.

BACK-UP LIGHTS – The back-up lights are next to the rear license plate. They will come on when the transmission is shifted to Reverse. On cars with an automatic transmission, the back-up lights are activated by the neutral start switch. On cars with a manual transmission, they are activated by a separate back-up light switch on the transmission. For more information, see Section 7.

CENTER HIGH-MOUNTED STOPLIGHT – The center high-mounted stoplight, in the center of the rear spoiler, will come on whenever the brake pedal is pushed down. The light is powered separately from the rear tail/stop/turn signal lights through a separate circuit in the stoplight switch (see Section 8A).

EXTERIOR LIGHT MONITOR – The Driver Information Center, on cars so equipped, also monitors certain front and rear lights. When a bulb burns out, the message **"FRONT LAMP"** or **"REAR LAMP"** will appear in the DIC display, and a light will come on to indicate which bulb has burned out. For more information, see Section 8A.

FOG LIGHTS – The fog light switches are to the left of the steering column on the edge of the instrument panel. To use the fog lights, first turn on the headlights or parking lights. Then, push the middle switch (with the fog light symbol) to turn on the fog lights. Push the left **("OFF")** switch to turn off the fog lights.

The fog lights should not be used as a substitute for the headlights.

Switching to high-beam headlights will turn off the fog lights; switching back to low-beams will turn the fog lights on again.

The fog lights must be aimed for proper illumination of the road. Fog light aim should be checked: at least once a year; when a new light housing is installed; or if service or repairs in the front end area have (or may have) disturbed the fog light mountings.

FRONT PARKING/TURN SIGNAL LIGHTS – Pushing either side of the instrument panel switch will turn on the front parking lights. (Pushing the left side of the switch will also turn on the headlights.) When the ignition is on and the turn signal lever is moved, the appropriate front parking light flashes to signal a turn. Both lights will flash when the hazard flashers are on.

If the driver's door is opened when the parking lights are on, a warning tone will sound. For more information, see Section 8A-77.

HAZARD FLASHERS – The hazard warning flasher is part of the turn signal circuit. Pushing in the button (on the right side of the steering column) will cause the front and rear turn signal lights, and the front sidemarker lights, to flash. Pull out the collar around the button to turn off the hazard flashers.

The hazard flashers will work with the ignition either off or on. When the hazard flashers are on, the turn signals do not work.

The hazard flashers will stop flashing and stay on brightly if the brake pedal is pushed down.

HEADLIGHTS – The headlights are controlled by the switch on the instrument panel (to the left of the speedometer). They will come on whether or not the ignition is turned on. Pushing the upper left side of the switch turns on the headlights and causes the headlight motors to raise the headlights. Pushing the bottom part of the switch turns off the headlights, and they should lower.

If the driver's door is opened when the ignition is off and the headlights are on, a warning tone will sound. For more information, see Section 8A-77.

Headlight low-beam and high-beam are controlled by the turn signal/multifunction lever on the left side of the steering column. When the headlights are on, pull the lever toward the steering wheel until the switch clicks; the lights will change from low-beam to high-beam, or from high-beam to low-beam. An indicator light on the center instrument cluster will come on when the high-beam headlights are on.

The headlights must be aimed for proper illumination of the road. Headlight aim should be checked: at least once a year; when a new headlight bulb is installed; or if service or repairs in the front end area have (or may have) disturbed the headlights or their mountings. The headlight bezels do not need to be removed to aim the headlights.

Headlight focus is set when the sealed-beam unit is made; no adjustment for focus is necessary or possible.

Some state and local laws specify requirements for headlight aim; these laws must be followed.

LICENSE PLATE LIGHTS – A light above the rear license plate will come on when the headlights or parking lights are on.

LIGHT SWITCH – Most exterior lights are controlled by the switch on the instrument panel, to the left of the speedometer. Pushing the upper right part of the switch turns on the front parking lights, the taillights and the sidemarker lights. (It also turns on the instrument panel lights.) Pushing the upper left part of the switch turns on all these lights plus the headlights. Pushing the bottom part of the switch turns off all lights.

In some cases (such as going through a car wash), it may be desirable to raise the headlights without leaving the headlights on. To do so, push the upper right part of the switch to turn on the parking lights. Then, lightly push the upper right part of the switch; the headlights will raise but will not turn on. (Remember that the parking lights and taillights will stay on.)

For more information on this switch (including on-car service), see Section 8C. Also see Section 8C for information on interior lights.

REAR TAIL/STOP/TURN SIGNAL LIGHTS – The rear tail/stop/turn signal lights are part of the same light assembly. Pushing either side of the instrument panel switch turns on the taillights. When the brake pedal is pushed down, the lights glow brighter to serve as stoplights.

Moving the turn signal lever when the ignition is on causes the appropriate rear lights to flash. (If the brake pedal is held down and a turn is signalled, one side will flash and the other will stay on brightly.)

All lights will flash when the hazard flashers are on. However, if the brake pedal is pushed while the hazard flashers are on, the lights will stop flashing and stay on brightly.

SIDEMARKER LIGHTS – The front and rear sidemarker lights will come on when the headlights or parking lights are on. Both front and rear sidemarker lights also have reflectors; they will shine when struck by light, whether or not the car's lights are on.

If the headlights or parking lights are *off* when a turn is signalled, the front sidemarker light will flash in unison with the front turn signal light on the same side. If the lights are *on* when a turn is signalled, the front sidemarker light and front turn signal light flash alternately.

TURN SIGNALS – The front turn signals are combined with the front parking lights. The rear turn signals are part of the rear tail/stop/turn signal lights. The turn signals work only when the ignition is on, and the hazard flashers are turned off.

The turn signals are controlled by the turn signal/multifunction lever on the left side of the steering column. Moving the lever all the way up or down (past the detent) will turn on the turn signals. When the turn is completed, the lever will return to neutral and the turn signals will stop flashing.

For changing lanes or shallow turns where the steering wheel does not move far enough to cancel the signal, move the turn signal lever only to the first detent. When the lever is released, it will return to neutral and the turn signals will cancel.

UNDERHOOD LIGHT – The underhood light will come on when the hood is raised.

HORNS

The horn(s) are mounted behind the front fascia on the driver's side. Pushing the pad in the center of the steering wheel sounds the horn by closing the horn relay (in the convenience center behind the instrument panel, to the right of the steering column). The horns use a solenoid-operated diaphragm to generate sound. See Section 8A-40 for wiring and circuit information.

ON-CAR SERVICE

Wiring diagrams and other diagnosis information is given in Section 8A. Information on properly repairing wiring harnesses, connectors, etc., is on 8A-5.

Most lighting problems are caused by loose connectors, open or shorted wiring, burned-out bulbs, bad switches, inadequate ground or blown fuses. Many of these require only replacement of a defective part. When replacing a part that requires a special procedure (such as a lens and housing assembly sealed together), follow the instructions normally included in the replacement parts package.

When removing a part that requires special sealing items (such as sealing washers), be sure to reinstall those items when replacing the part. Also, if any body sealing items (grommets, etc.) are disturbed, be sure to repair them so the passenger compartment remains properly sealed.

EXTERIOR LIGHTS

BACK-UP LIGHTS

Fig. 8B-8

Replacement Bulb: Trade No. 1156, 32 Candlepower

To replace a back-up light bulb, see "Rear Tail/Stop/Turn Signal Lights" in this section. For information on the back-up light switch on the transmission, see Section 7.

CENTER HIGH-MOUNTED STOPLIGHT

Fig. 8B-1

Assembly Replacement

Remove or Disconnect

1. Spoiler (see Body Service Manual, Section 7H)
2. Four nuts from assembly
3. Stoplight assembly

Install or Connect

1. Stoplight assembly
2. Four nuts
3. Spoiler

Bulb Replacement

Replacement Bulb: Trade No. 577, 21 Candlepower

Remove or Disconnect

1. Two screws from lens
2. Lens
3. Bulb from socket

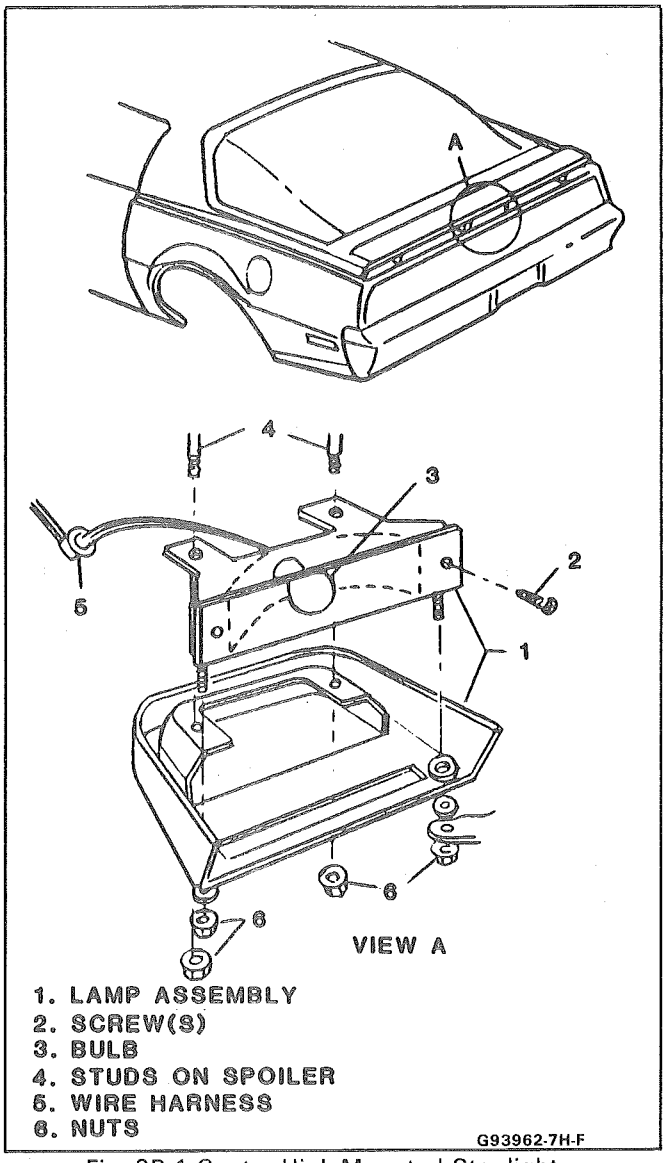


Fig. 8B-1 Center High-Mounted Stoplight

Install or Connect

1. Bulb into socket
2. Lens
3. Two screws

FOG LIGHTS

Figs. 8B-2 and 8B-3

Assembly or Bulb Replacement

Replacement Bulb: Trade No. H-3

1—FRONT END FASCIA

2—NUT

3—FRONT IMPACT FASCIA

4—TO FOG LP CONN. FWD. LAMP HARN.

5—LAMP ASM.(FOG) (LH & RH)

6—BOLT/SCREW

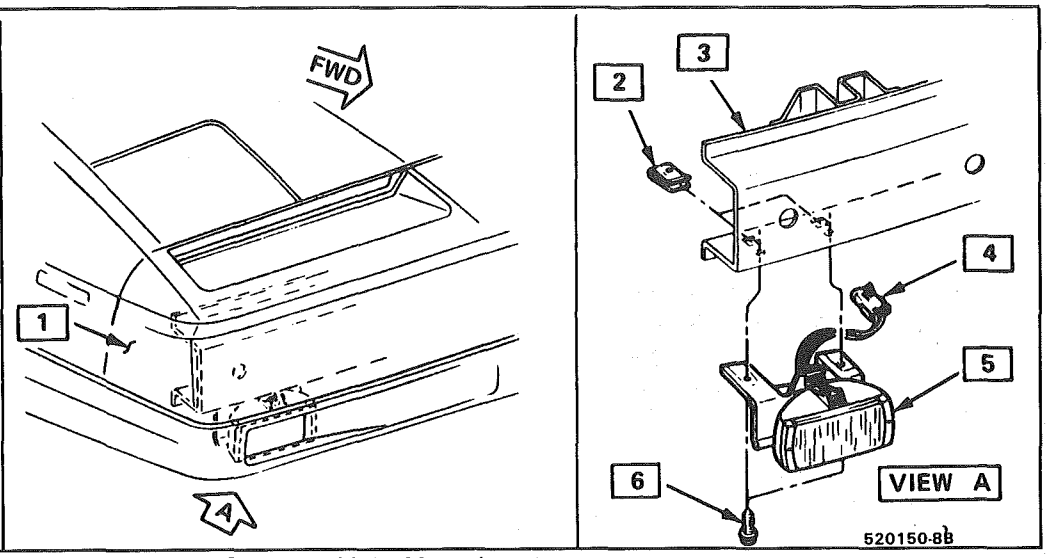


Fig. 8B-2 Fog Light Mounting

Remove or Disconnect

1. Six screws holding filler panel under front fascia
2. Filler panel
3. Electrical connector
4. Two bolts holding light
5. Fog light assembly by lowering through filler panel opening
6. To replace bulb, remove two screws at front of assembly

Install or Connect

1. Fog light assembly (including new bulb, if necessary)
2. Two bolts
3. Electrical connector
4. Filler panel
5. Six screws

Adjust

- Fog light aim

FRONT PARKING/TURN SIGNAL LIGHTS

Fig. 8B-4

Assembly Replacement

Remove or Disconnect

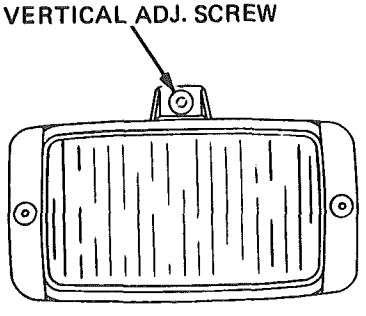
1. Open hood
2. Socket from assembly
3. Two bolts/screws
4. Assembly

Install or Connect

1. Assembly
2. Two bolts/screws
3. Socket
4. Close hood

Bulb Replacement

Replacement Bulb: Trade No. 2057, 32/2 Candlepower



FOG LAMP AIM SPECIFICATIONS

1. FOG LAMP TO BE VISUALLY AIMED AND CHECKED IN ACCORD WITH SECTIONS SIX AND SEVEN OF S.A.E. STANDARD J599.
2. PREPARE VEHICLE FOR CHECKING OF SETTING AIM AS FOLLOWS:
   - A. COMPLETELY ASSEMBLE ALL COMPONENTS ON VEHICLE.
   - B. PLACE VEHICLE ON LEVEL PAD.
   - C. STOP ALL OTHER OPERATIONS OF WORK ON VEHICLE
   - D. CLOSE DOORS.
   - E. ROCK VEHICLE SIDEWAYS.
3. TO CHECK OF SET AIM PER J599, USE THE FOLLOWING LIMITS:
   - A. VERTICAL AIM. TOP EDGE OF HIGH INTENSITY ZONE TO BE 100mm BELOW CENTERLINE OF FOG LAMP +51mm/-64mm ON A SCREEN 7.6m AWAY

FUEL LOAD TO BE ½ TANK OR LESS

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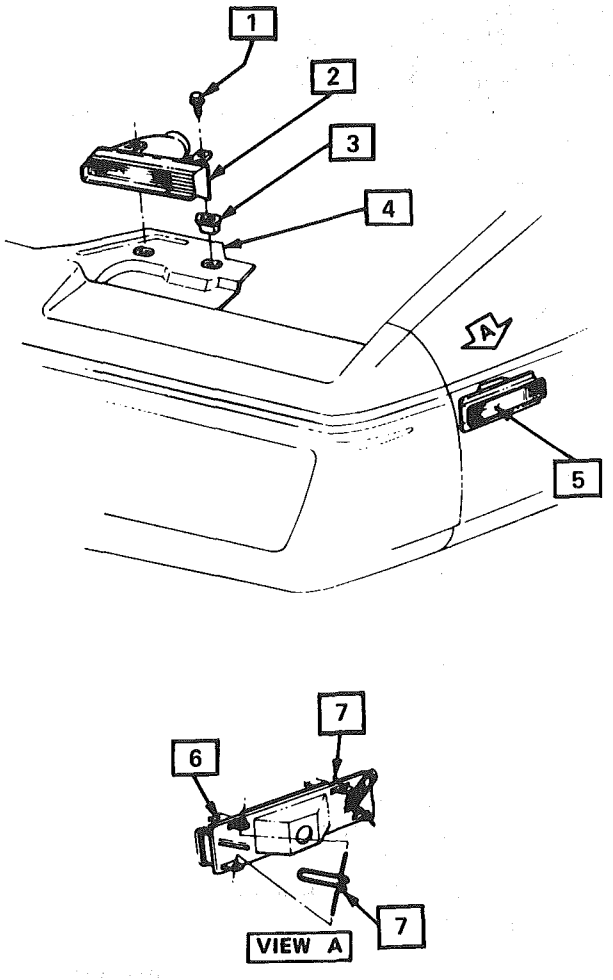
Fig. 8B-3 Fog Light Aiming



MAIN VIEW

1 – BOLT/SCREW (2)
2 – PARKING/TURN LIGHT ASSEMBLY
3 – NUT (2)
4 – FRONT END PANEL ASSEMBLY
5 – SIDEMARKER LIGHT ASSEMBLY

VIEW A

6 – FENDER TABS (4)
7 – RETAINER (2)

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Fig. 8B-4 Front Parking/Turn Signals and Sidemarker Lights

Remove or Disconnect

1. Open hood
2. Socket from assembly
3. Bulb from socket

Install or Connect

1. Bulb into socket
2. Socket
3. Close hood

HAZARD FLASHER

The hazard flasher is in the convenience center, behind the instrument panel to the right of the steering column. To remove the flasher, lift it up and out.

HEADLIGHTS

Actuator Replacement

Fig. 8B-5

Remove or Disconnect

1. Headlight assembly (see following procedure)
2. Nut from actuator arm
3. Three bolts attaching actuator to assembly
4. Actuator

Install or Connect

1. Actuator
2. Three bolts
3. Nut
4. Headlight assembly (see following procedure)

Assembly Replacement

Fig. 8B-5

Remove or Disconnect

1. Open hood
2. Raise headlight by turning the knob on the headlight motor counterclockwise
3. Four screws, two at each side of bezel
4. Bezel
5. Retaining spring, by using a hooked tool (such as a cotter pin remover) to pull it to the side
6. Four screws from retainer
7. Retainer
8. Headlight by rotating toward center of car
9. Electrical connector
10. Turn the knob to lower the headlight assembly about halfway
11. Two lower headlight assembly bolts by reaching through opening
12. Two upper headlight assembly bolts
13. Electrical connector at motor
14. Headlight assembly

Install or Connect

1. Headlight assembly

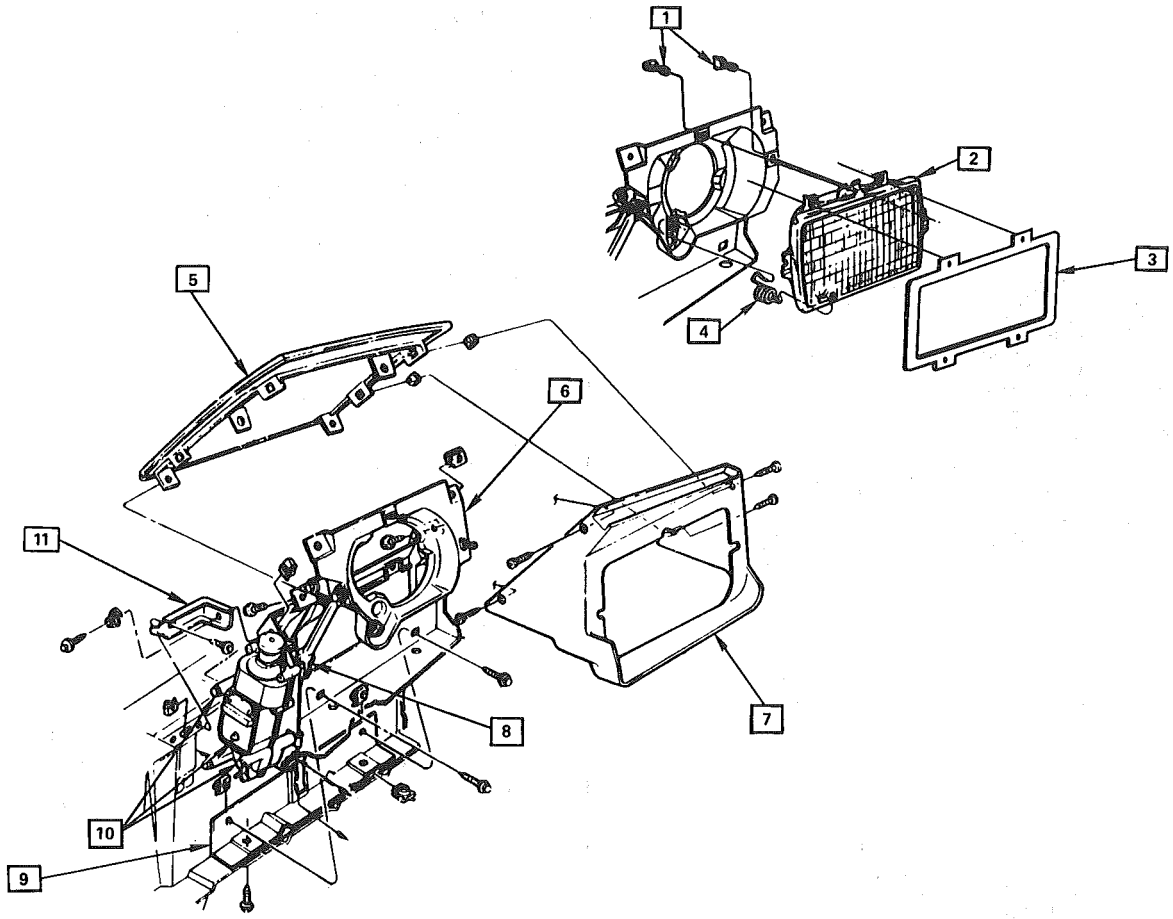

Fig. 8B-5 Headlight Assembly

2. Electrical connector at motor
3. Two upper bolts
4. Two lower bolts
5. Raise headlight assembly
6. Electrical connector
7. Headlight
8. Retainer
9. Four retainer screws
10. Bezel
11. Four screws at bezel
12. Retaining spring
13. Lower headlight
14. Close hood

Adjust

- Headlight aim

Aiming Headlights

Fig. 8B-6

Horizontal and vertical aiming of each sealed-beam headlight is done by two (2) adjusting screws which move the mounting ring in the body against the tension of a coil spring. When using mechanical aimers, follow the manufacturer's instructions.

Bulb Replacement

Replacement Bulb: Trade No. H6054, 35 Watt/65 Watt

Remove or Disconnect

1. Open hood
2. Raise headlight by turning knob on top of headlight motor
3. Four screws, two at each side of bezel
4. Bezel
5. Retaining spring, by using a hooked tool (such as a cotter pin remover) to move it to the side
6. Headlight by rotating toward center of car
7. Electrical connector
8. Retaining ring

HEADLAMP AIM SPECIFICATIONS

I. CALIBRATE MECHANICAL AIMERS CONFORMING TO SAE J602 AS FOLLOWS:
   1. SET MASTER FIXTURE TO "0" U/D AND "0" R/L
   2. CALIBRATE AIMERS ON MASTER FIXTURE TO READ "0" U/D AND R/L.

II. PREPARE VEHICLE FOR CHECKING OR SETTING AIM AS FOLLOWS:
   1. COMPLETELY ASSEMBLE ALL COMPONENTS ON VEHICLE.
   2. PLACE VEHICLE ON LEVEL PAD.
   3. STOP ALL OTHER OPERATIONS OR WORK ON VEHICLE.
   4. CLOSE DOORS.
   5. ATTACH AIMERS TO HEADLAMPS.
   6. ROCK VEHICLE SIDEWAYS.

III. TO CHECK OR SET AIM PER SAE J599 USE THE FOLLOWING LIMITS:

VERTICAL AIM	HORIZONTAL AIM
2 UP TO 2.5 DOWN	4"R TO 4"L

FUEL LOAD TO BE 1/2 TANK OR LESS

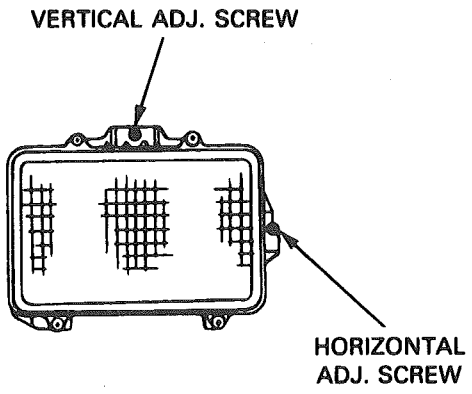

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Fig. 8B-6 Headlight Aiming

Install or Connect

1. Retaining ring
2. Electrical connector
3. Headlight
4. Retaining spring
5. Bezel
6. Four screws into bezel
7. Lower headlight
8. Close hood

Adjust

- Headlight aim

LICENSE PLATE LIGHT

Fig. 8B-7

Assembly or Bulb Replacement

Remove or Disconnect

1. License plate

1 – TAILLIGHT LENS
2 – LICENSE PLATE LIGHT ASSEMBLY
3 – SCREWS (2)
4 – REAR FASCIA
5 – CONNECTOR

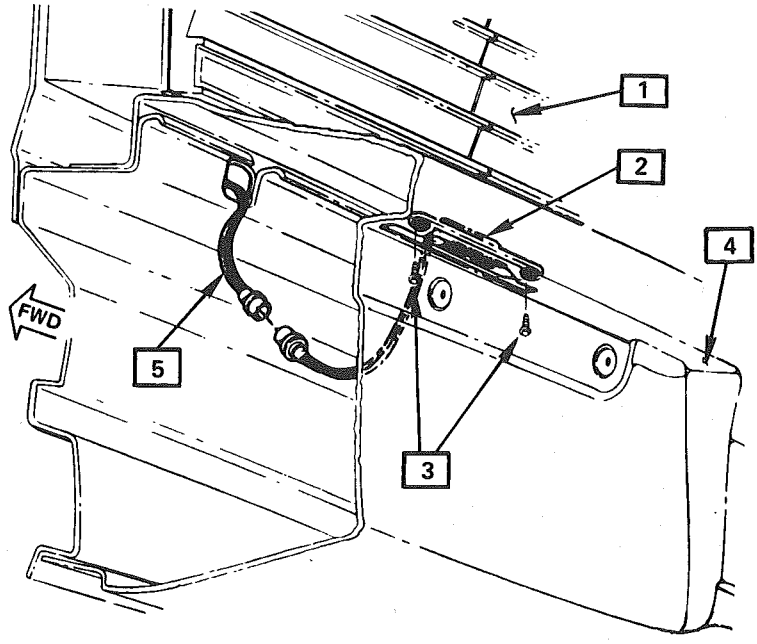

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Fig. 8B-7 License Plate Light

2. Two screws
3. Light assembly
4. Socket from assembly
5. Bulb from socket

Install or Connect

1. Bulb into socket
2. Socket into assembly
3. Assembly
4. Two screws
5. License plate

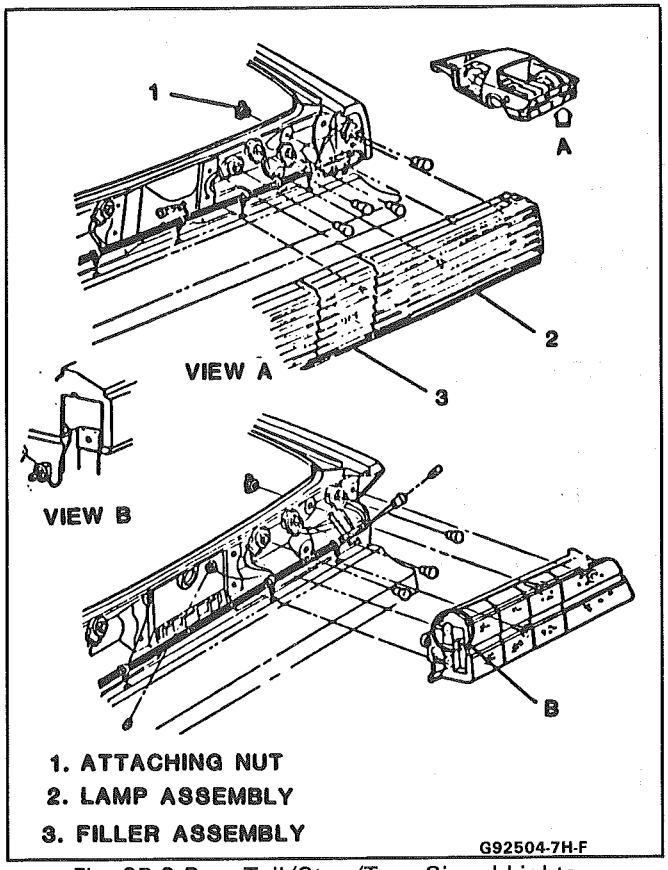


Fig. 8B-8 Rear Tail/Stop/Turn Signal Lights

REAR TAIL/STOP/TURN SIGNAL LIGHTS

Fig. 8B-8

Replacement Bulb: Trade No. 2057, 32/2 Candlepower

Remove or Disconnect

1. Open hatch
2. Fasteners at trim panel
3. Trim panel
4. Wing nuts holding taillight lens
5. Taillight lens
6. Bulb from socket

Install or Connect

1. Bulb into socket
2. Taillight lens
3. Wing nuts

Adjust

- Taillight lens for proper appearance before tightening wing nuts

4. Trim panel
5. Fasteners
6. Close hatch

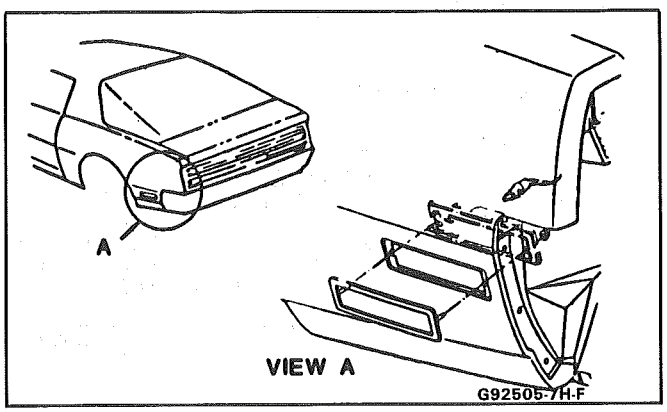


Fig. 8B-9 Rear Sidemarker Lights

SIDEMARKER LIGHTS

Figs. 8B-4 (Front) and 8B-9 (Rear)

Assembly Replacement – Front

Remove or Disconnect

1. Six screws from filler panel under front fascia
2. Filler panel
3. Socket from assembly
4. Two retainers
5. Assembly

Install or Connect

1. Assembly
2. Two retainers
3. Socket
4. Filler panel
5. Six screws

Assembly Replacement – Rear

Remove or Disconnect

1. Open hatch
2. Fasteners at trim panel
3. Trim panel
4. Socket from assembly
5. Two nuts
6. Assembly

Install or Connect

1. Assembly
2. Two nuts
3. Socket
4. Trim panel
5. Fasteners
6. Close hatch

Bulb Replacement - Front

Replacement Bulb: Trade No. 194, 2 Candlepower

Remove or Disconnect

1. Six screws from filler panel under front fascia
2. Filler panel
3. Socket from assembly
4. Bulb from socket

Install or Connect

1. Bulb into socket
2. Socket into assembly
3. Filler panel
4. Six screws

Bulb Replacement - Rear

Replacement Bulb: Trade No. 194, 2 Candlepower

Remove or Disconnect

1. Open hatch
2. Fasteners at trim panel
3. Trim panel
4. Socket from assembly
5. Bulb from socket

Install or Connect

1. Bulb into socket
2. Socket into assembly
3. Trim panel
4. Fasteners
5. Close hatch

TURN SIGNAL FLASHER

The turn signal flasher is in the convenience center, behind the instrument panel to the right of the steering column. To remove the flasher, lift it up and out.

UNDERHOOD LIGHT

Replacement Bulb: Trade No. 93, 15 Candlepower

Remove or Disconnect

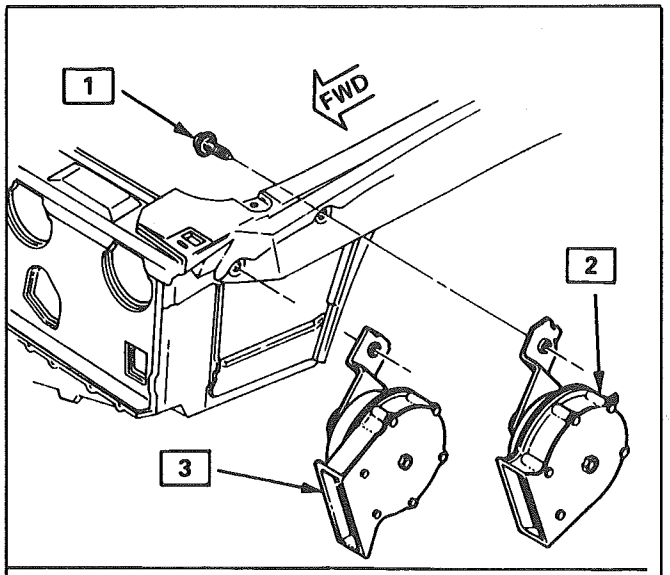
1. Open hood
2. Bulb from socket

Install or Connect

1. Bulb into socket
2. Close hood

HORNS

If the horns do not blow, or blow constantly, follow the diagnostic procedures in Section 8A.



1–BOLT/SCREW

2–HORN ASM.(F-NOTE)

3–HORN ASM.(A-NOTE)

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Fig. 8B-10 Horns

Horn Tone Poor

1. **Horn Tone Poor** – Tighten bolts in mounting area, or correct poor connections or ground.
2. **Low-Pitched Moan** – Sounds like "mooing." Caused by current too high. Adjust current (see the following).
3. **Weak Tone** – Current too low. Correct poor connections or ground, or adjust current (see the following).
4. **Weak, Strained Tone** – Remove foreign object in horn.
5. **Harsh Vibration** – Bend bracket so horn is not touching sheet metal.

Current Adjustment

Current draw for a horn while operating should be 4.5 to 5.5 amperes at 11.5 to 12.5 volts. High current (more than 20 amperes) indicates an overheated winding or shorted horn; replace the horn. A current reading of about 18 amperes means the contact points are not opening; adjust the horn current (see the following).

No current reading indicates a broken connection, or an open circuit due to a broken lead or overheated horn. An overheated horn must be replaced. No current reading may also mean the contact points are open; adjust the horn (see the following).

Adjust

1. Increase Current – Turn adjusting screw clockwise
2. Decrease Current – Turn adjusting screw counterclockwise
3. Current adjustments should be made 1/4 turn (90°) at a time

Horn Assembly

Fig. 8B-11

Remove or Disconnect

1. Six screws from filler panel behind front fascia on driver's side
2. Filler panel
3. Electrical connector
4. Bolt/screw
5. Horn

Install or Connect

1. Horn
2. Bolt/screw
3. Electrical connector
4. Filler panel
5. Six screws

Horn Relay

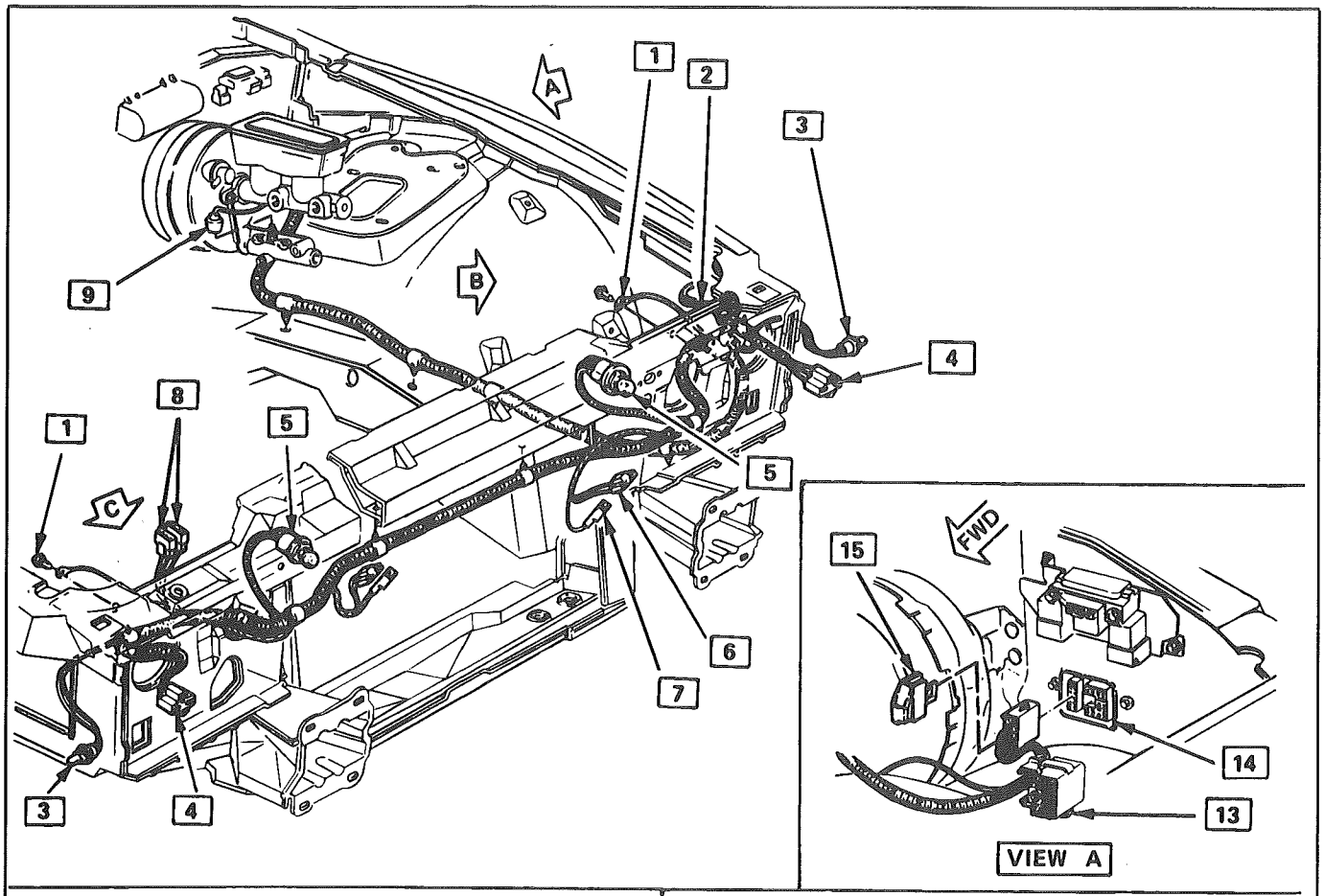
The horn relay is in the convenience center, behind the instrument panel to the right of the steering column. To remove the relay, pull it straight out.

REPLACEMENT LIGHT BULBS

For exterior light replacement procedures, see the rest of this section. For interior light replacement procedures, see Section 8A and Section 8C.

EXTERIOR LIGHTS	Trade No.
Back-up Lights	1156
Center High-Mounted Stoplight	577
Front Parking/Turn Signal Lights	2057
Fog Lights	H-3
Headlights	H6054
License Plate Lights	194
Rear Tail/Stop/Turn Signal Lights	2057
Sidemarker Lights (Front and Rear)	194
Underhood Light	211

INTERIOR LIGHTS	Trade No.
Air Conditioner/Heater Controls	194
Ashtray & Lighter	194
Cargo Compartment	561
Cluster & Speedometer (Tach)	194
Console Ashtray	194
Console Compartment	194
Courtesy Lights	194
Dome Light	561
Gear Selector Indicator	74
Headlight High-Beam Indicator	194
Indicator Lights	
Brake System Warning	194
With Gages	74
Charging System Warning (except Rally Gages)	194
Choke Warning	194
With Gages	74
Oil Pressure Warning (except Rally Gages)	194
Seat Belt Reminder	194
With Gages	74
Service Engine Soon Warning	194
With Gages	74
Temperature Gage Warning (except Rally Gages)	194
Reading Light	906
Turn Signal Indicators	194



1–HEADLAMP GROUND

2–HORN LEADS

3–SIDE MARKER

4–HEADLAMP

5–TURN SIGNAL PARK LAMP

6–HEADLAMP MOTOR RELAY

7–HEADLAMP MOTOR JUMPER

8 – HEADLAMP ISOLATION RELAY

9– BRAKE PRESS. WARNING SW.

10–TO SIDE MARKER

11–HORNS

12–TO HEADLAMP

13–ENGINE HARNESS CONNECTOR

14–BULKHEAD CONNECTOR

15–CONNECTOR END CAP

16–HEADLAMP MOTOR ISOLATION RELAY

Fig. 8B-11 Forward Light Wiring

SECTION 8C

INSTRUMENT PANEL, GAGES & CONSOLE

CONTENTS

GENERAL DESCRIPTION

INSTRUMENT PANEL AND GAGES

The instrument panel on most cars is a single unit design and all parts attach to the main instrument panel with clips and screws. To service the instrument panel and components see On-Car Service information.

PRINTED CIRCUIT

All models are equipped with printed circuits which supply current to most instrument panel lights and instruments. These circuits are made of copper foil which is die cut and bonded to a polyester base film (usually mylar). The printed circuit electrical power is supplied by a connector containing several wires, as shown in the instrument panel wiring harness installation instructions. The connector also helps retain the printed circuit to the speedo cluster. The rest of the circuit is retained by additional connectors (if used) and snap-in bulbs/sockets. For individual printed circuit diagrams, see Section 8A-80/81/82/83, 'Instrument Panel'.

INSTRUMENTS

Instruments consist of fuel gage, temperature indicator light, generator light, oil pressure indicator light, and speedometer. See Section 9F for optional Rally Gages and tachometer. Service on instruments can be obtained through authorized repair stations. However, knowledge of instrument circuit checks will help in determining if operating difficulties lie in the instrument itself or its related circuit.

Instruments have been designed for easy removal by elimination of separate wiring. With the wiring provisions integrated with the instrument panel wiring, the instruments can be removed after removing the trim and lens.

SPEED SENSORS

There are three speed sensors currently in use:

1. PINION GEAR; used in mechanical systems
2. PHOTO SPEED SENSORS; used in mechanical systems
3. PM GENERATOR; used in electronic systems

Pinion Gear

The PINION GEAR is attached to the transmission/transaxle output shaft and rotates in proportion to the speed of the car. This rotation is transferred from the pinion gear to the speedometer head by the speedometer cable.

Photo Speed Sensor

On vehicles that use a mechanical drag-cup speedometer, the PHOTO SPEED SENSOR is inserted into the frame of the mechanical speedometer to provide an electrical feedback to the ECM that represents vehicle speed. The ECM needs to know how fast the car is traveling in order to control and operate the cruise control, cooling fan, and transmission and evaporative systems.

The photo speed sensor is made up of two special electronic devices: a Light-Emitting Diode (LED) and a photo transistor (a light-sensitive amplifying device). In the mechanical speedometer, there is a reflective blade attached to the rotating magnet that is polished to reflect light from the LED back to the photo transistor. Whenever the light strikes the photo transistor, it conducts electricity. The rate that the transistor conducts and does not conduct is proportional to the speed of the magnet, which reflects the speed of the vehicle. This voltage signal from the photo transistor is sent to a buffer amplifier (part of the speed sensor) to be conditioned to a signal the ECM can understand and use.

PM Generator

The PM (Permanent Magnet) GENERATOR is a small AC generator used to sense vehicle speed. The shaft of the generator fits into a pinion gear in the transmission/transaxle output shaft (as does the cable in a mechanical system).

When the output shaft rotates, the magnet rotates and generates a voltage. Except for the permanent magnet, the PM Generator is exactly like a miniature alternator. The PM generator is constructed to provide a voltage whose frequency is about 1.1 cycles per second for every mile per hour of vehicle speed. This signal is sent to a buffer amplifier, and then to the speedometer and the ECM.

SPEEDOMETER

The speedometer is a road speed indicator with an odometer to record total mileage, and, on some cars, a resettable trip odometer.

The major types of speedometers in use are mechanical instruments and electronic instruments. Mechanical speedometers use a dial needle to indicate road speed. Electronic speedometers include instruments that use a dial indicator and those using bar-graph LCD's (Liquid Crystal Displays) or VTF (Vacuum Tube Fluorescent) displays.

Mechanical Speedometers

A mechanical speedometer uses a cable driven (through a pinion gear) by the transmission output shaft. The cable connects to a magnetic drag-cup inside the speedometer, which rotates the speedometer needle. The end of the rotating cable causes a small bar magnet to rotate within a metal cup. As the magnet rotates within the cup, it magnetically attracts (drags) the metal cup along behind it. Two things work to prevent the cup from rotating as quickly as the magnet.

1. The distance of the magnet from the cup reduces its effect on the cup.
2. A counterspring is wound around the shaft of the cup in such a way as to oppose the normal rotation of the cup. The counterspring loads the drag-cup to give correct indication of the speed, prevent needle overshoot, and also to return the drag cup to a zero point.

Mechanical speedometers require a photo speed sensor to provide road speed information for the ECM and other systems, such as Cruise Control and the TCC (Torque Converter Clutch).

The odometer on these instruments consists of numbered wheels that are rotated by the speedometer cable through worm gears.

Quartz Speedometer

The quartz speedometer is an electrically driven instrument. The indicator needle is driven by a precision DC motor, and is countersprung to provide a mechanical load, prevent overshoot of the needle, and return the indicator to zero when the road speed is zero.

The source of speed information for a quartz speedometer is the PM generator. From the PM generator, speed information goes to the buffer amplifier to be converted to digital voltage, and then to the cluster circuitry, which interprets the speed of the vehicle and produces small voltage to apply to the speedometer motor.

The odometer on this instrument consists of numbered wheels that are electrically driven by a special precision DC motor called a stepper motor.

Digital Speedometer

Digital clusters utilize two types of displays: LCD (Liquid Crystal Display) and VTF (Vacuum Tube Fluorescent). They are used in digital speedometers and bar-graph tachometers, fuel gages, etc.

Speed information entering the cluster from the buffer amplifier is interpreted by a microcomputer which controls the speed indication, the tachometer display and the odometer reading.

The odometers associated with these instruments utilize either numbered wheels driven by a small motor or electronic displays. With an electronic display, the mileage reading is stored in a computer chip (called a non-volatile RAM chip; NVRAM) that does not become 'erased' when the vehicle is turned off, as the display does not retain the information.

FUEL GAGE

An electrical fuel gage is used on all models, consisting of an instrument panel gage and a fuel tank pick-up. The fuel gage indicates the quantity of fuel in

tank only when ignition switch is turned to "ON" or "ACCESSORY" positions.

When ignition is turned to "OFF" or "START" positions, the pointer may come to rest at any position. The letters "E" and "F" on the fuel gage are used to point out direction of indicator travel only.

TEMPERATURE WARNING LIGHT

The engine temperature warning light is controlled by a thermal switch which senses engine coolant temperatures.

When the ignition switch is turned to "START" position, a test circuit is closed and the light will come on to indicate whether the light is functioning properly.

It is important to note that with low boiling-point coolants (such as plain water) the temperature light may not come on even though the coolant is boiling.

GENERATOR WARNING LIGHT

The generator warning light, located in the instrument cluster, should come on when the ignition switch is turned "ON" and engine is **not** running. If not, either the bulb is burned out or wiring to generator has an open circuit.

When the generator voltage output becomes greater than the battery voltage, the "GEN" light should go out. This does not, however, indicate whether the battery is being charged or if the voltage regulator is functioning properly.

Checks of the charging system are covered in Section 6D, 'Engine Electrical'.

ENGINE OIL PRESSURE LIGHT

The engine oil pressure warning light is mounted in the instrument cluster and controlled by a pressure operated switch located on the engine block. When the ignition switch is in the "run" or "start" position, the oil pressure light should come on. If not, the bulb is burned out, there is an open circuit between the bulb and the oil pressure switch, or there is an open circuit between the oil pressure switch and the choke heater. After the engine is running, the oil pressure light should go out when the oil pressure reaches the correct specification. If not an oil pressure problem, a faulty oil pressure switch or an open circuit from the choke heater fuse to the oil pressure switch is indicated.

"SERVICE ENGINE SOON" LIGHT

All cars have a "SERVICE ENGINE SOON" light mounted in the instrument cluster. The "SERVICE ENGINE SOON" light should come on during engine starting. The light may stay on a short time after the engine starts. If the light comes on while driving, service to the emission control system may be required. See Section 6E and Section 8A-80, 'Instrument Cluster', for complete diagnosis and wiring diagrams of the "SERVICE ENGINE SOON" light circuit.

UPSHIFT INDICATOR LIGHT

If your vehicle has a manual transmission, there may be an "Upshift" light on the instrument panel. This light is illuminated to indicate optimum shift points throughout the range from optimum fuel economy to optimum performance. When this light is on, shift your transmission to the next higher gear range if conditions permit. For fuel economy, accelerate slowly and shift when the light goes on. For performance, accelerate as desired and shift when the light goes on.

Safe operation of the vehicle may require shifting differently than indicated by the "Upshift" light to adapt to weather, road or traffic conditions.

Downshifting one or more gears may be required to keep the engine running smoothly or to maintain satisfactory performance.

DIAGNOSIS

Diagnostic information for all instrument panel electrical systems is found in Section 8A-80, 'Instrument Panel'.

CAUTION: When removing or installing any electrical units, disconnect the negative battery cable to prevent possible short circuits which could lead to personal injury and/or property damage.

SPEEDOMETER

When replacing a speedometer or odometer assembly, the law requires the odometer reading of the replacement unit to be set to register the same mileage as the prior odometer. If the same mileage cannot be set, the law requires that the replacement odometer be set to zero and a label be installed on the driver's door frame to show the previous odometer reading and the date of replacement.

GENERAL INFORMATION

INSTRUMENT PANEL AND GAGES

The instrument panel is a single unit design and all parts attach to the main instrument panel with clips and screws. To service the instrument panel and components see Figs. 601 through 610.

ON-CAR SERVICE

INSTRUMENT PANEL PAD

Figure 601

Remove or Disconnect

1. Four (4) screws in defroster ducts.
2. Screws under lip of I.P. pad.
3. I.P. pad from carrier.

Install or Connect

1. I.P. to carrier.
2. Screws under lip of I.P. pad.
3. Four (4) screws in defroster ducts.

INSTRUMENT PANEL CLUSTER

Figure 603

Remove or Disconnect

1. Right and left lower trim plates. Removal of lower I.P. covers not required.
2. Instrument cluster trim plate.
3. Six (6) cluster attachment screws, pull cluster back and disconnect speedo cable and electrical connections.
4. Trip odometer, reset knob (if so equipped) and remove cluster lens.
5. Individual gages and/or speedo head are now accessible for service or replacement. If service is intended for only gages or tachometer, skip Step 3.

Install or Connect

1. Trip odometer, reset knob (if so equipped) and remove cluster lens.
2. Six (6) cluster attachment screws, pull cluster back and disconnect speedo cable and electrical connections.
3. Instrument cluster trim plate.
4. Right and left lower trim plates. Removal of lower I.P. covers not required.

INSTRUMENT PANEL CARRIER

Figure 602

Remove or Disconnect

1. Negative battery cable.
2. Console.
3. Instrument panel pad and lower hush panels.
4. Right and left lower I.P. covers and trim plates.
5. Instrument panel cluster and headlight switch.
6. Lower steering column.
7. Five (5) upper and six (6) lower I.P. carrier to cowl screws.
8. Instrument panel electrical harness at cowl (bulkhead) connector, and under dash.
9. I.P. carrier from car.
10. I.P. mounted components (A/C, defroster ducts, wiring harness, etc.) are now accessible for service or replacement.
11. Any seals or sealant damaged during disassembly.

Install or Connect

1. I.P. carrier to car.
2. Instrument panel electrical harness at cowl (bulkhead) connector, and under dash.
3. Five (5) upper and six (6) lower I.P. carrier to cowl screws.
4. Steering column.
5. Instrument panel cluster and headlight switch.
6. Right and left lower I.P. covers and trim plates.
7. Instrument panel pad and lower hush panels.
8. Console.
9. Negative battery cable.

HEADLIGHT SWITCH

Figure 620

Remove or Disconnect

1. Right and left lower trim plates. Removal of lower I.P. cover(s) not required.
2. I.P. cluster trim plate.
3. Two (2) switch assembly retaining screws.
4. Depress side tangs and pull switch assembly from I.P.
5. Individual switches of assembly are now accessible for service or replacement.

Install or Connect

1. Depress side tangs and replace switch assembly to I.P.
2. Two (2) switch assembly retaining screws.
3. I.P. cluster trim plate.
4. Right and left lower trim plates. Removal of lower I.P. cover(s) not required.

DASH MOUNTED ACCESSORY SWITCHES

Figure 621

Installation for various dash mounted accessory switches is shown in Fig. 621.

CONSOLE MOUNTED SWITCHES AND ACCESSORIES

Figure 617

Installation of various console mounted switches, lights and accessories is shown in Figure 617.

CONSOLE

Remove or Disconnect

1. Negative battery cable.
2. Shift gate trim plate. Requires removal of shift handle and seven (7) screws.
3. Radio/A/C-heater controller trim plate.

4. A/C-heater controller (see Section 1B).
5. Radio (see Section 9A).
6. Electrical connectors (cigar lighter, ash tray light, etc.) and pull harness forward out of console.
7. Six (6) console hold-down and two (2) console to I.P. screws and remove console.

Install or Connect

1. Six (6) console hold-down and two (2) console to I.P. screws and replace console.
2. Electrical connectors (cigar lighter, ash tray light, etc.) and pull harness forward out of console.
3. Radio (see Section 9A).
4. A/C-heater controller (see Section 1B).
5. Radio/A/C-heater controller trim plate.
6. Shift gate trim plate.
7. Negative battery cable.

SPEEDOMETER

Figures 603

Remove or Disconnect

1. Right and left lower trim plates. Removal of lower I.P. cover(s) not required.
2. Instrument cluster trim plate.
3. Six (6) cluster attachment screws, pull cluster back and disconnect speedo cable.
4. Cluster lens.
5. Two (2) screws retaining speedo head in cluster from rear.
6. Electrical (VSS) connectors and remove speedo head.

Install or Connect

1. Electrical (VSS) connectors and replace speedo head.
2. Two (2) screws retaining speedo head in cluster from rear.
3. Cluster lens.
4. Six (6) cluster attachment screws, reconnect speedo cable, replace cluster.
5. Instrument cluster trim plate.
6. Right and left lower trim plates.

1–NUT

2–BOLT/SCREW

3–PAD ASM.

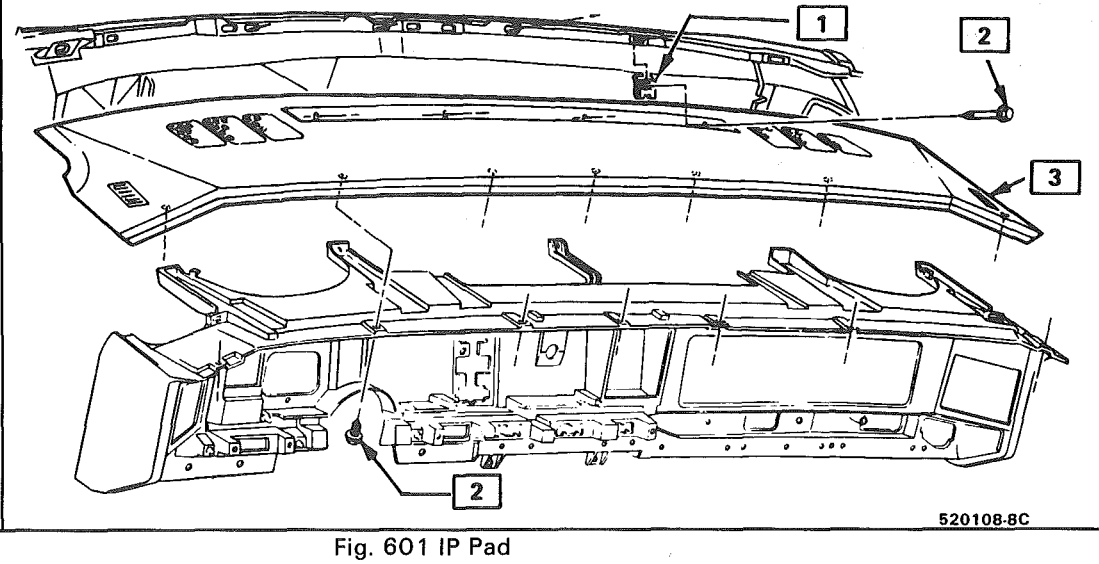
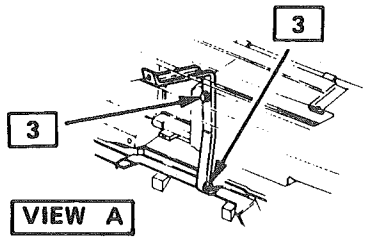


Fig. 601 IP Pad



1–SUPPORT

2–NUT

3–BOLT/SCREW

4–PANEL ASM.

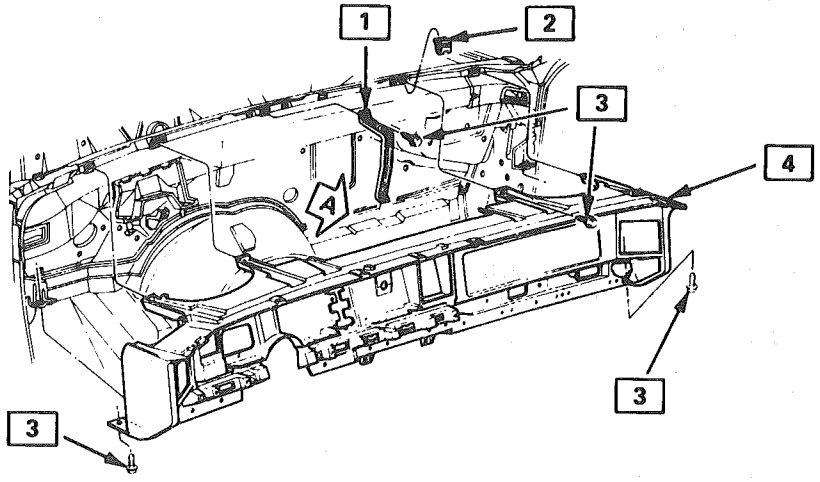
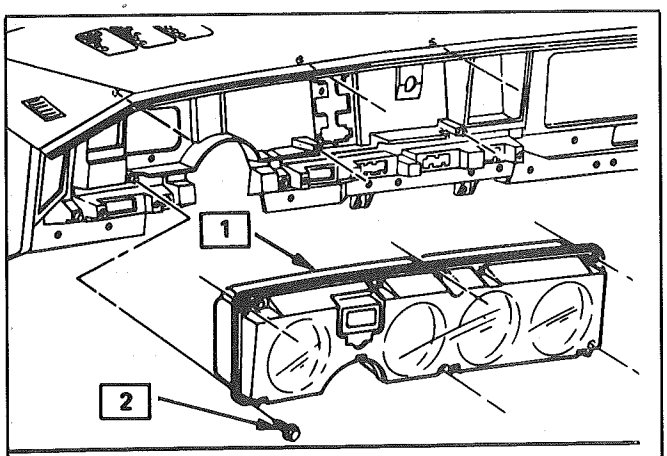


Fig. 602 IP Carrier

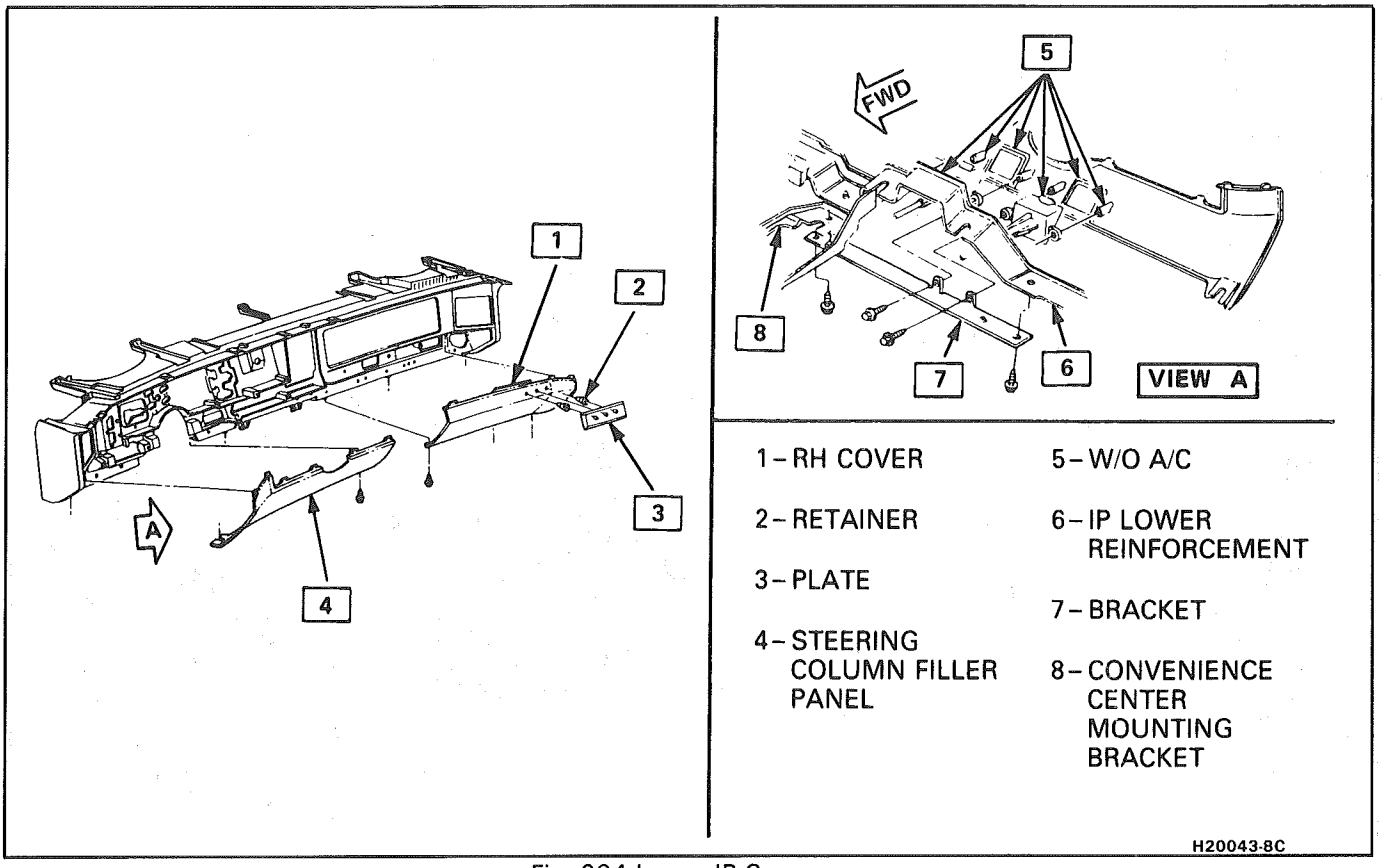


1–INSTRUMENT CLUSTER

2–SCREW

520113-8C

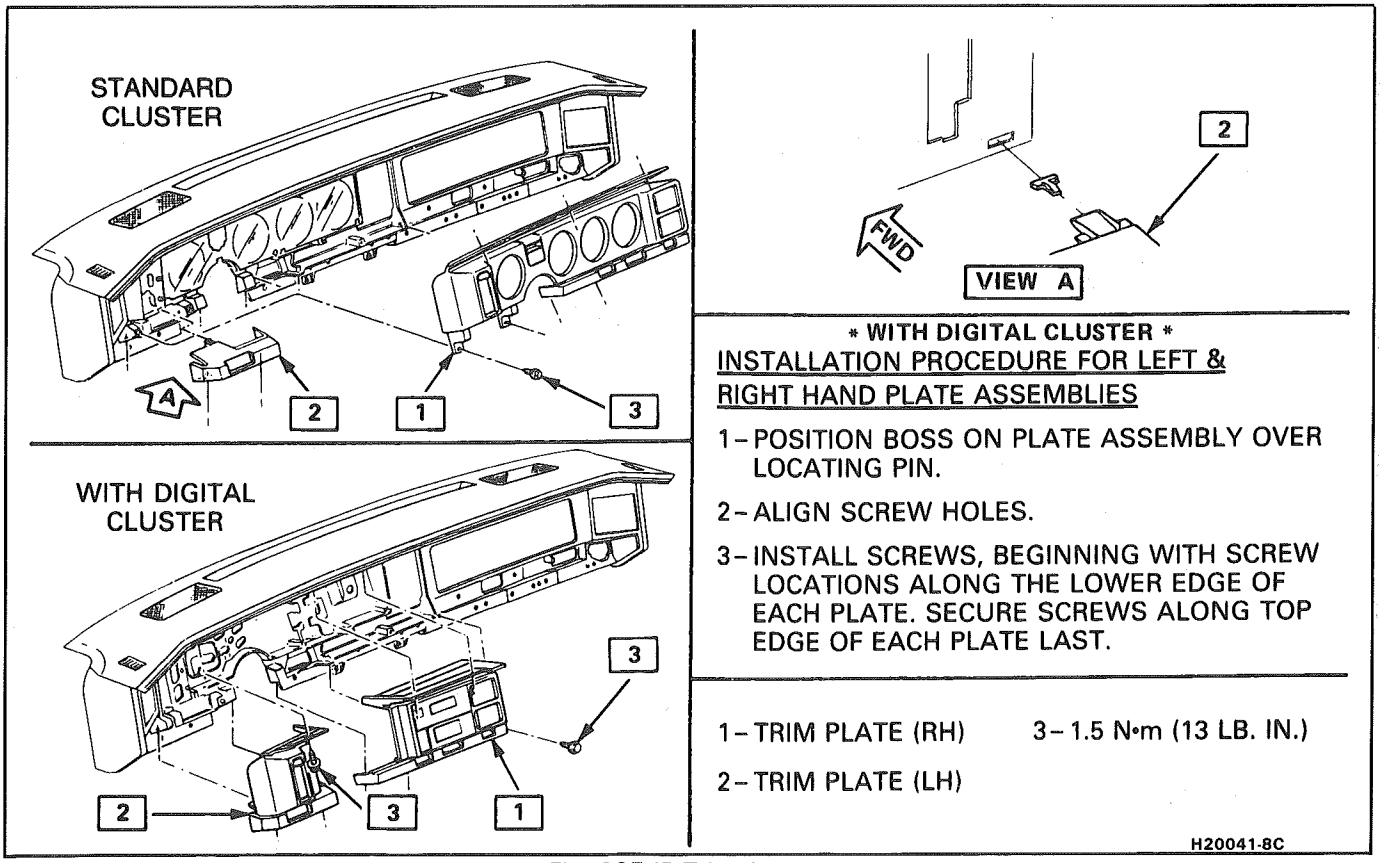
Fig. 603 Instrument Cluster



1 - RH COVER
2 - RETAINER
3 - PLATE
4 - STEERING COLUMN FILLER PANEL
5 - W/O A/C
6 - IP LOWER REINFORCEMENT
7 - BRACKET
8 - CONVENIENCE CENTER MOUNTING BRACKET

H20043-8C

Fig. 604 Lower IP Covers



* WITH DIGITAL CLUSTER *

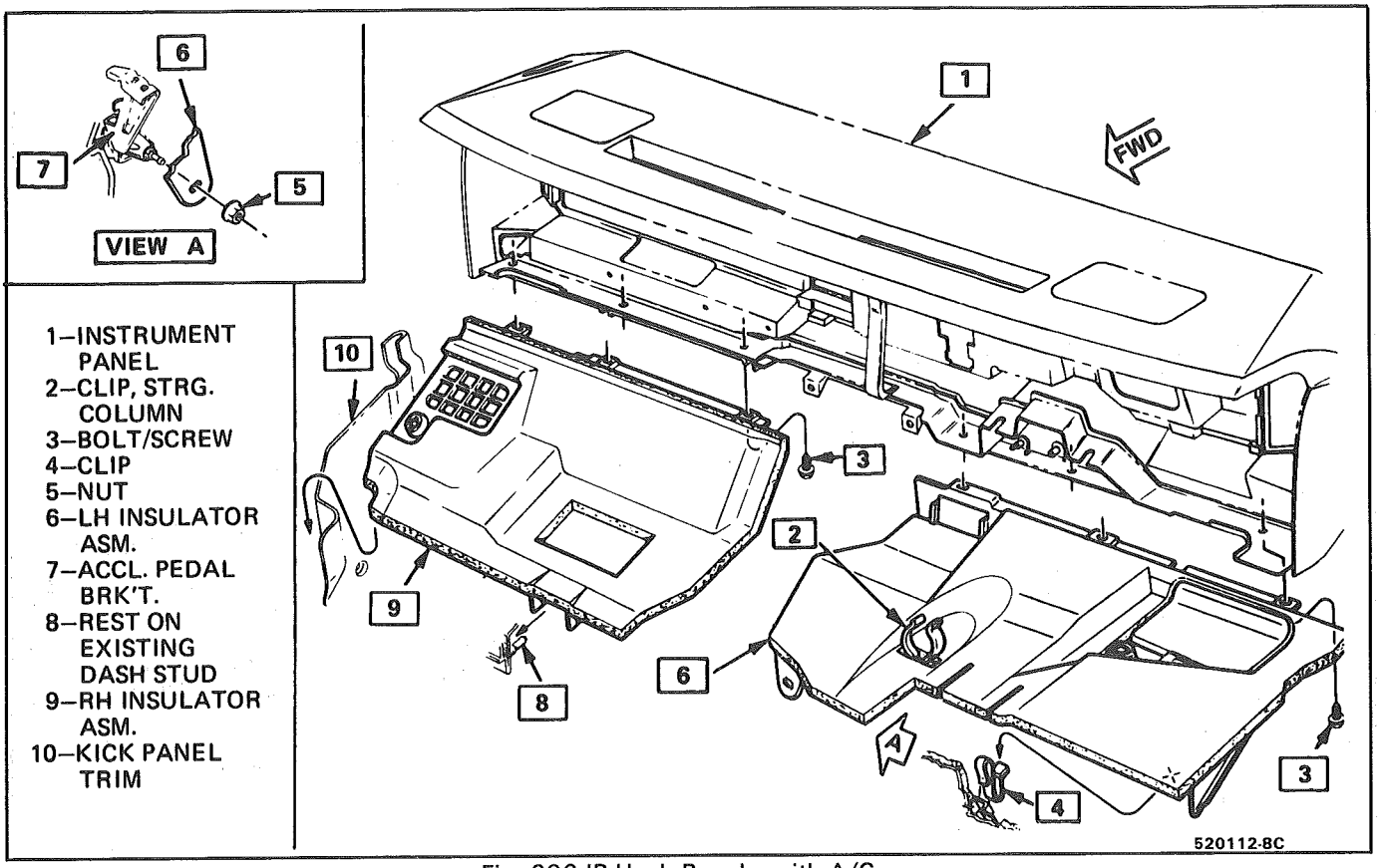
INSTALLATION PROCEDURE FOR LEFT & RIGHT HAND PLATE ASSEMBLIES

1 - POSITION BOSS ON PLATE ASSEMBLY OVER LOCATING PIN.
2 - ALIGN SCREW HOLES.
3 - INSTALL SCREWS, BEGINNING WITH SCREW LOCATIONS ALONG THE LOWER EDGE OF EACH PLATE. SECURE SCREWS ALONG TOP EDGE OF EACH PLATE LAST.

1 - TRIM PLATE (RH)
2 - TRIM PLATE (LH)
3 - 1.5 N•m (13 LB. IN.)

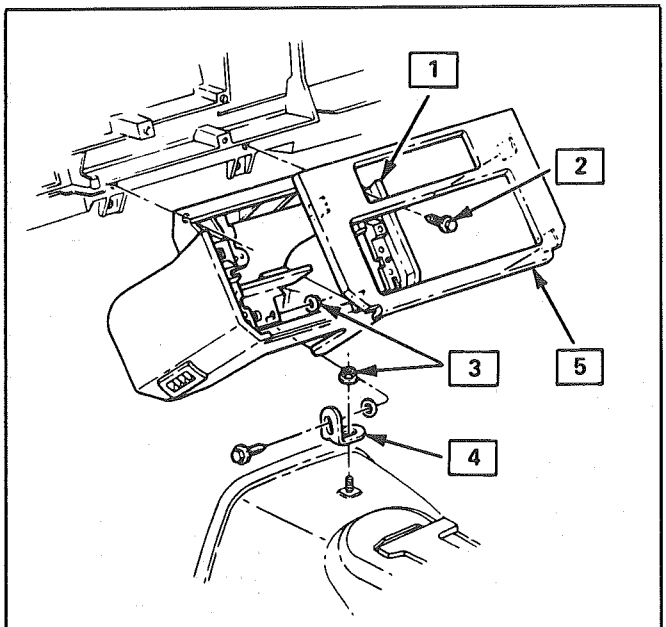
H20041-8C

Fig. 605 IP Trimplates



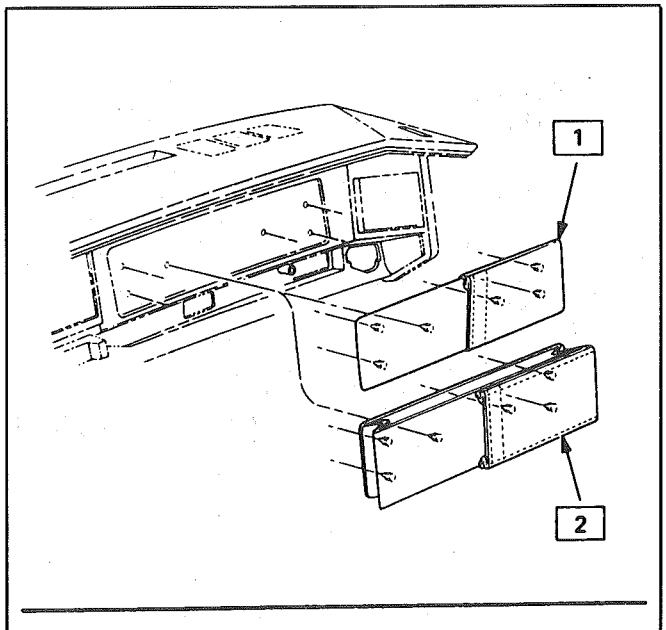
1–INSTRUMENT PANEL
2–CLIP, STRG. COLUMN
3–BOLT/SCREW
4–CLIP
5–NUT
6–LH INSULATOR ASM.
7–ACCL. PEDAL BRK'T.
8–REST ON EXISTING DASH STUD
9–RH INSULATOR ASM.
10–KICK PANEL TRIM

Fig. 606 IP Hush Panels; with A/C



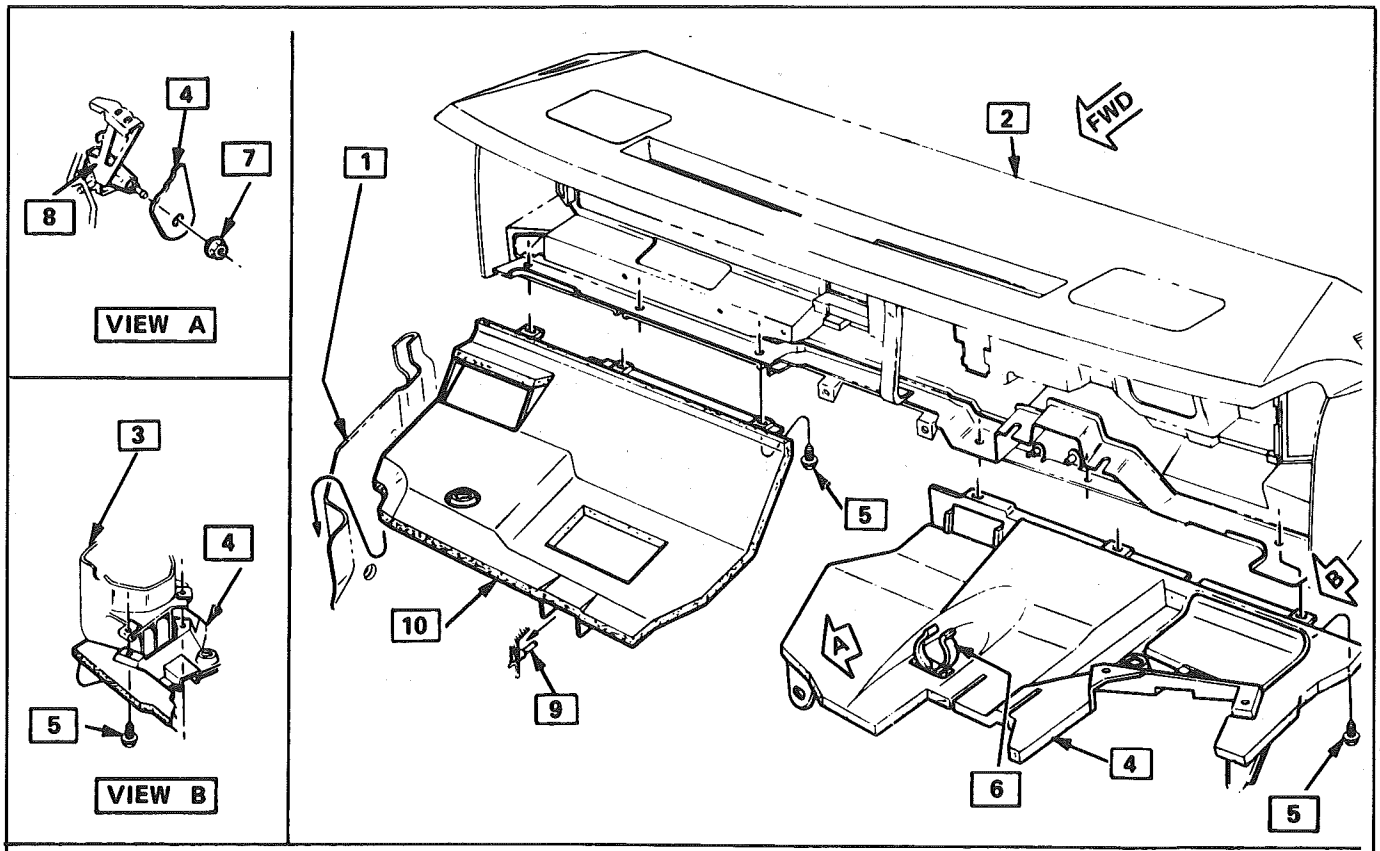
1 – PAD ASM.
2 – 4 N•m (36 LB. IN.)
3 – 6 N•m (54 LB. IN.)
4 – BRACKET
5 – TRIM PLATE

Fig. 607 IP Lower Trim Pad (Console)



1 – MAP HOLDER
2 – MAP POCKET

Fig. 608 Map Holder or Map Pocket



1–KICK PANEL TRIM
2–INSTRUMENT PANEL
3–LH VENT DUCT EXTENSION
4–LH INSULATOR ASM.
5–BOLT/SCREW
6–CLIP INTO STEERING COLUMN
7–NUT
8 –ACCEL. PEDAL BRK'T.
9–REST ON EXISTING DASH STUD
10–RH INSULATOR ASM.

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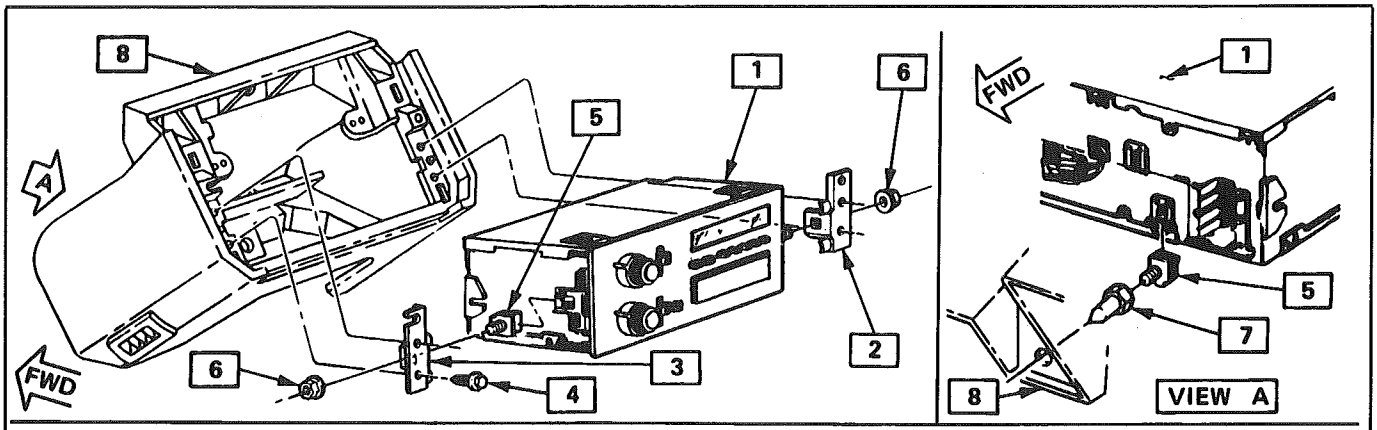
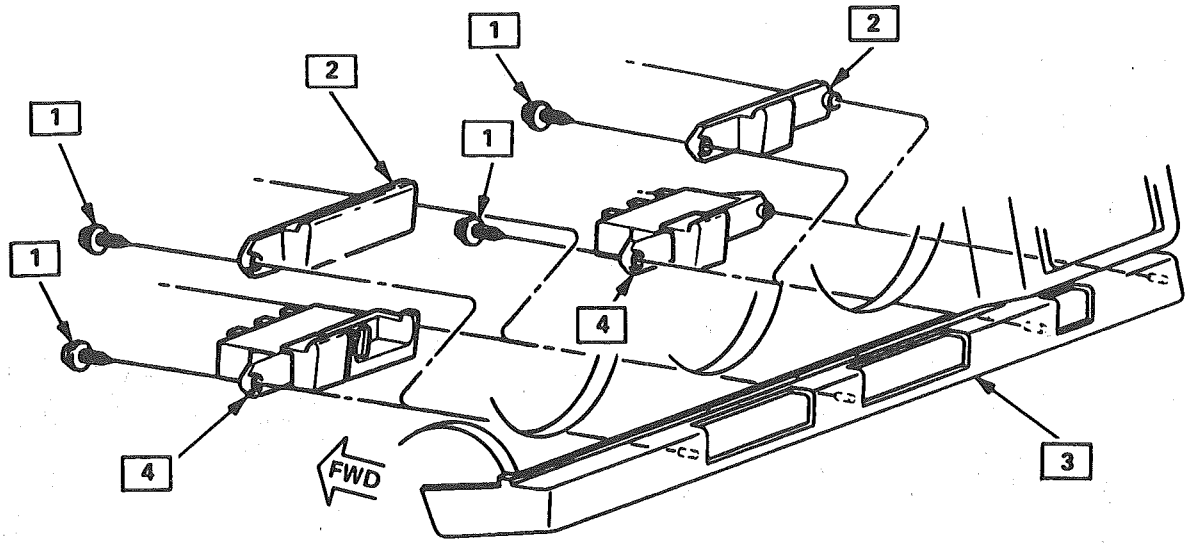
Fig. 609 IP Hush Panels; w/o A/C



1—RADIO ASM.
2—BRACKET
3—BRACKET
4—BOLT/SCREW (4)
5—BOLT/SCREW (3)
6—NUT
7—BUMPER
8—I/P LOWER TRIM PAD

520208-8C

Fig. 610 Radio Mounting



1–BOLT/SCREW–USING TORQUE, CONTROL TOOL, 800 RPM MAX.

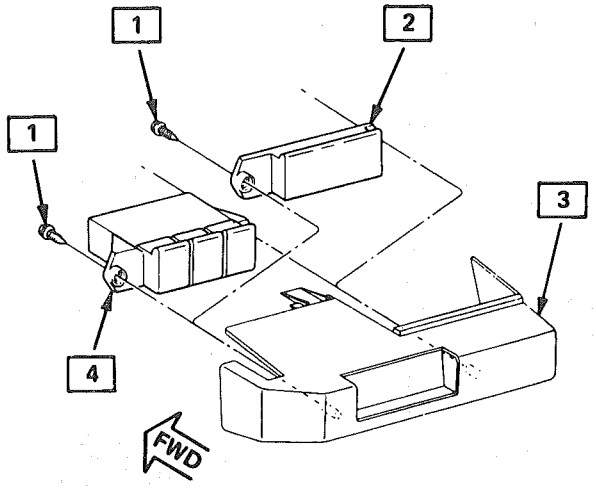
2–COVER

3–TRIM PLATE I.P.

4–SWITCH ASM.

520176-8C

Fig. 611 Subwoofer & Hatch Release Switches/Covers



1 - 1.5 N•m (13 LB. IN.)

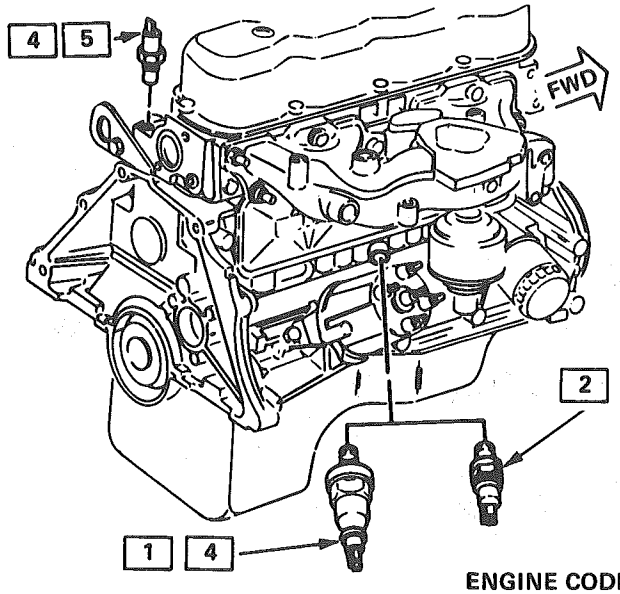
2 - COVER (W/O FOG LAMPS)

3 - IP TRIMPLATE (LH)

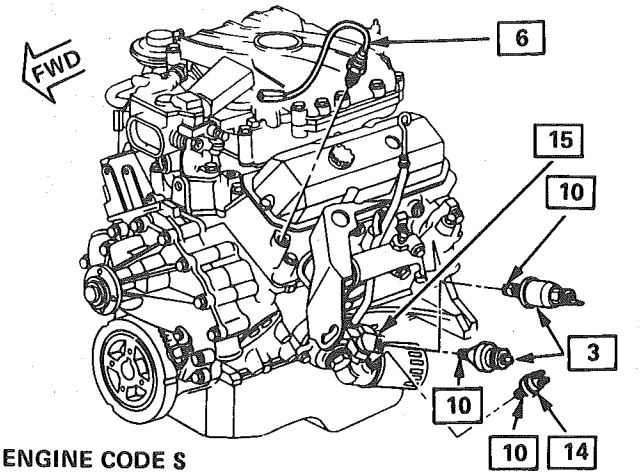
4 - SWITCH

H20042-8C

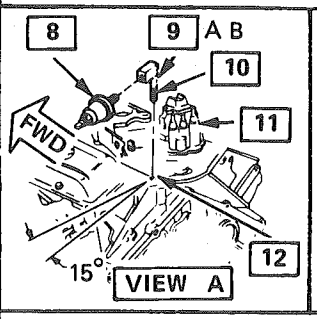
Fig. 612 Foglamp Switch/Cover

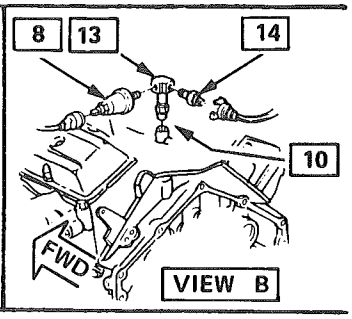


ENGINE CODE 2

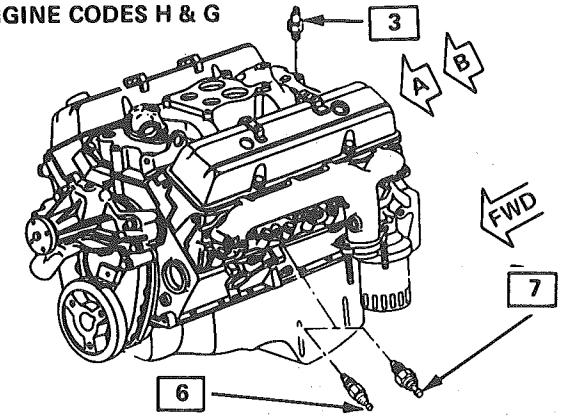


ENGINE CODE S





ENGINE CODES H & G



10—SEALER-OIL PRESS (0.040 ml)

11—DISTRIBUTOR

12—RFC OF ENGINE

13—FITTING ASM-OIL

14—SWITCH ASM-FUEL PUMP

15—FITTING (ENGINE)

1—SENDER ASM OIL, W/GAGES

2—SWITCH ASM-OIL, W/O GAGES

3—SWITCH ASM OIL

4—SENSOR ASM-WATER, W/GAGES

5—SWITCH ASM-WATER, W/O GAGES

6—SWITCH ASM, WATER

7—SENSOR ASM,WATER

8—SENSOR ASM-OIL PRESS

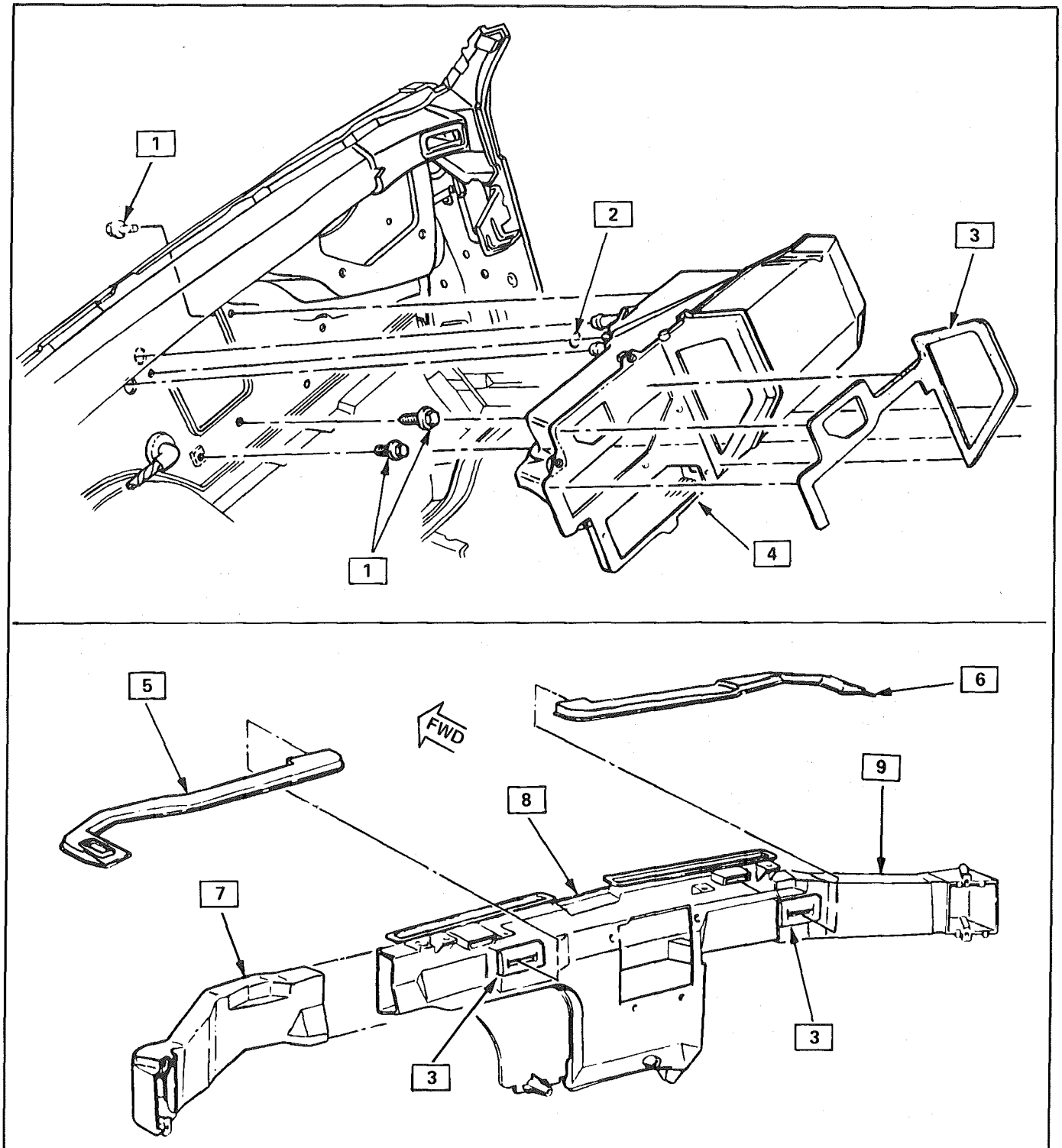
9—FITTING OIL— CODE H

A—INSTALL ITEM 9 15°±° off OFF RFC OF ENGINE AS SHOWN.

B—REMOVE EXISTING PLUG FROM ENGINE ASM.

G20039-8C

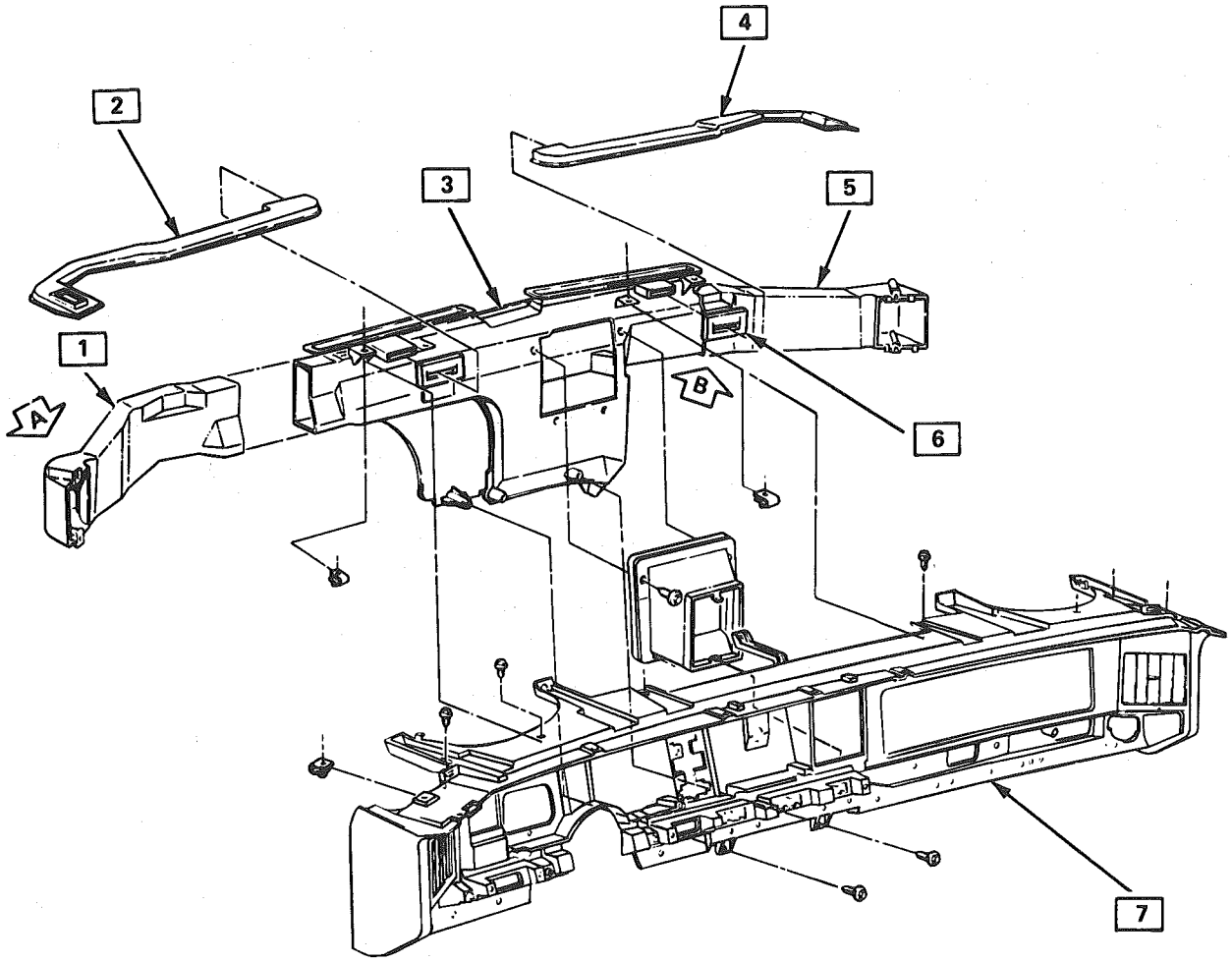
Fig. 613 Oil Pressure and Temperature Switches

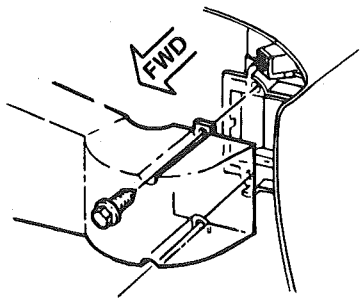


1–BOLT/SCREW
2–STUD, PART OF CASE ASSEMBLY
3–SEAL
4–CORE AND CASE ASSEMBLY
5–DUCT - SIDE WINDOW DEFROSTER L.H.
6–DUCT - SIDE WINDOW DEFROSTER R.H.
7–DUCT–OTR. AIR-R.H.
8 –DIST. ASM
9–DUCT–OTR. AIR-L.H.

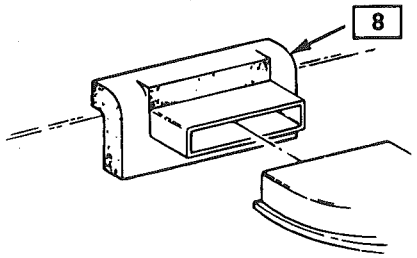
G20011-1A

Fig. 614 Heater/Ventilation/Defroster Ductwork





VIEW A



VIEW B

1–DUCT-A/C LEFT

2–DUCT-SIDE WIND. DEF., LH

3–DUCT-CENTER/DEFROST

4–DUCT-SIDE WIND. DEF., RH

5–DUCT-A/C RIGHT

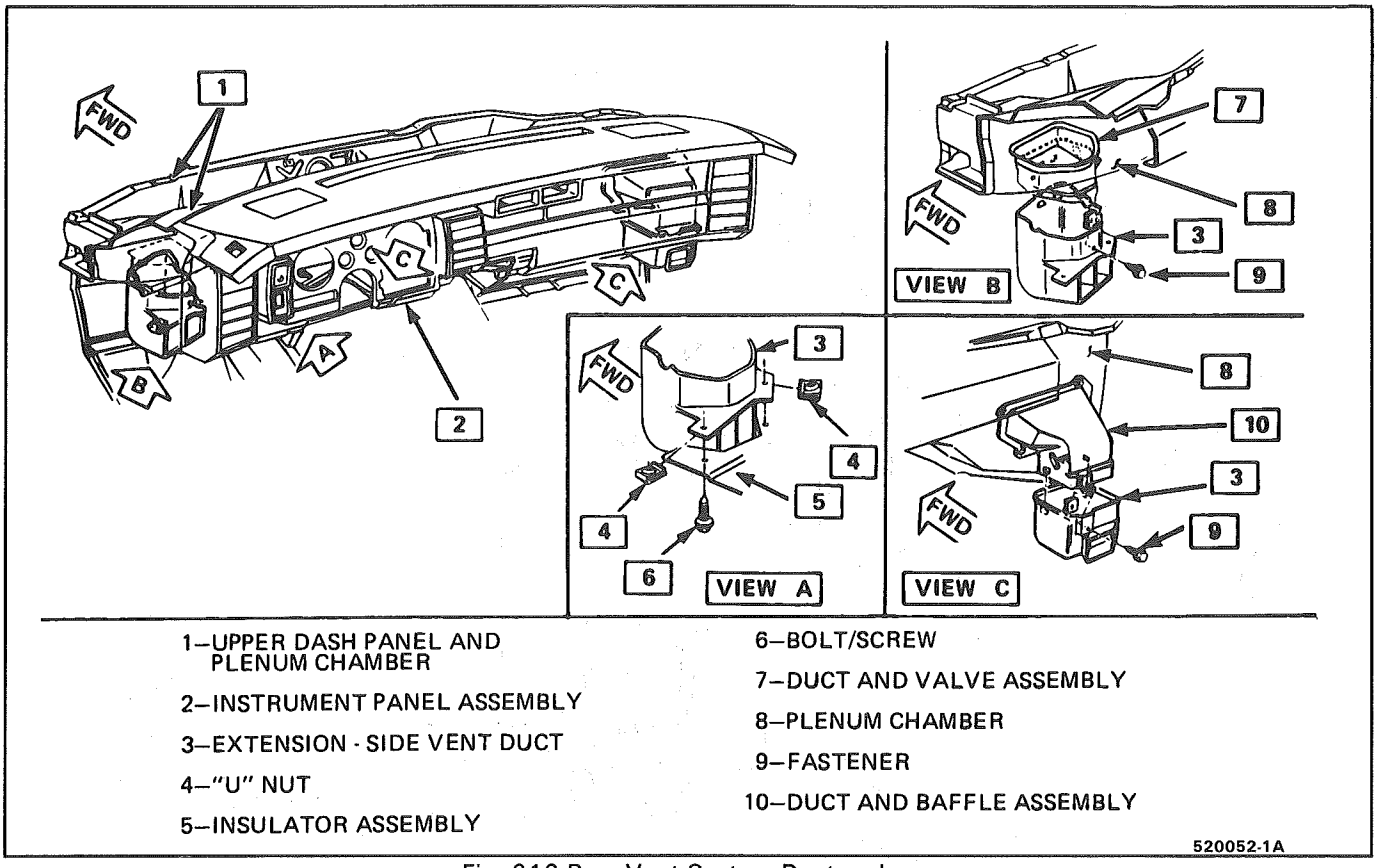
6–DUCT-CENTER DISTRIBUTION

7–INSTRUMENT CARRIER

8–GASKET

520132-1B

Fig. 615 A/C and Defroster Ductwork



1–UPPER DASH PANEL AND PLENUM CHAMBER
2–INSTRUMENT PANEL ASSEMBLY
3–EXTENSION - SIDE VENT DUCT
4–"U" NUT
5–INSULATOR ASSEMBLY
6–BOLT/SCREW
7–DUCT AND VALVE ASSEMBLY
8–PLENUM CHAMBER
9–FASTENER
10–DUCT AND BAFFLE ASSEMBLY

520052-1A

Fig. 616 Ram Vent System Ductwork

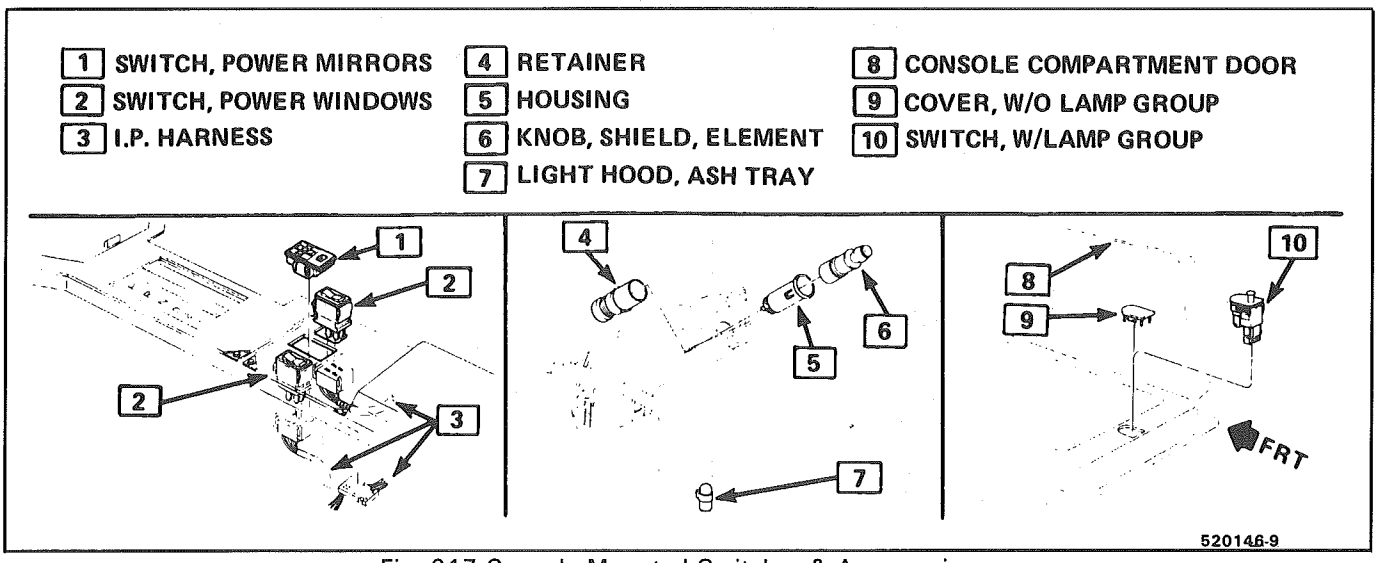
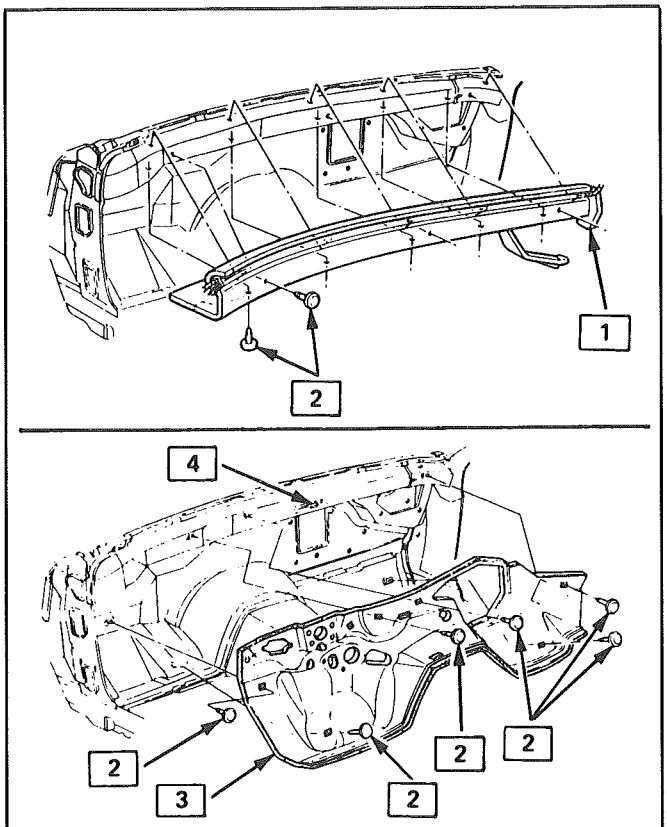


Fig. 617 Console Mounted Switches & Accessories



1 – INSULATOR (UPPER); UPPER RETENTION IS PROVIDED BY CROSS CAR WIRE HARNESS CONDUIT FASTENERS.
2 – RETAINER
3 – INSULATOR (LOWER)
4 – BEND TAB TO RETAIN MAT

H20040-8C

Fig. 618 Dash Insulators

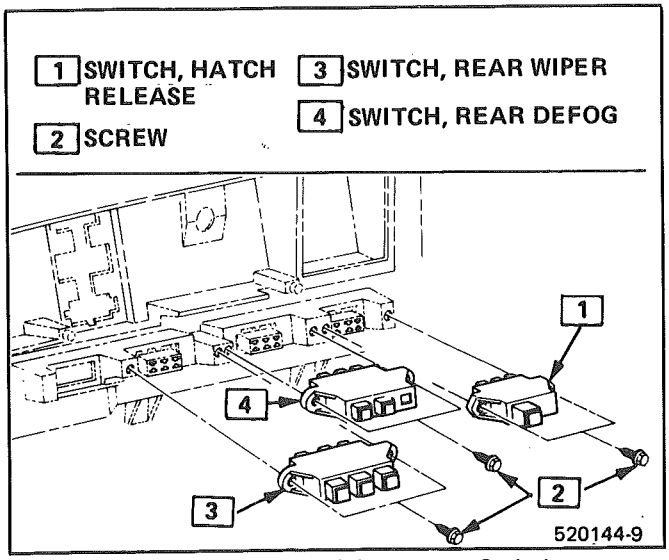
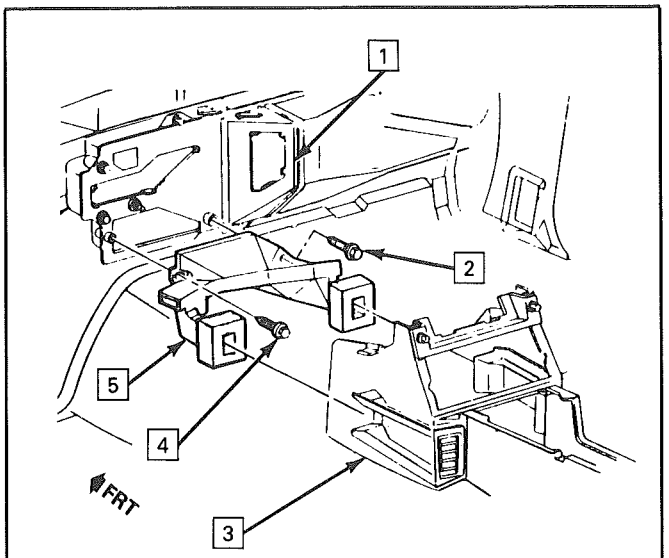


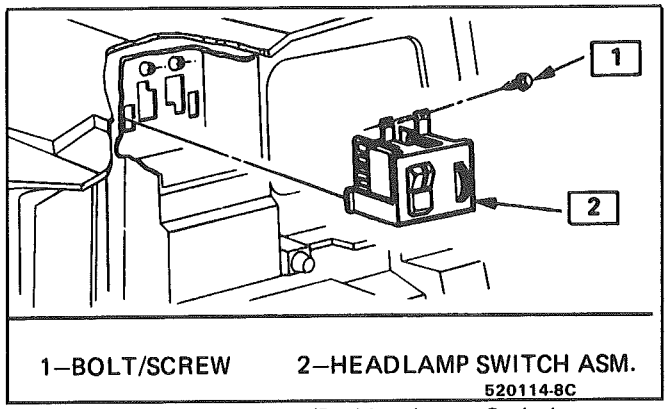
Fig. 621 Dash Mounted Accessory Switches



1. HEATER AND DEFROSTER ASSEMBLY
2. 1.4 N·m (12 LBS. IN.) INSTALL FIRST
3. CONSOLE ASSEMBLY
4. 1.4 N·m (12 LBS. IN.)
5. FLOOR OUTLET ASSEMBLY

J10003-1A-F

Fig. 619 Heater Floor Outlet



1–BOLT/SCREW 2–HEADLAMP SWITCH ASM.

520114-8C

Fig. 620 Headlamp/Parking Lamp Switch

SECTION 8E

F CARLINE WINDSHIELD WIPER-WASHER SYSTEM (PULSE & STANDARD)

CONTENTS

GENERAL DESCRIPTION

Figs. 1 and 2

The Permanent Magnet (PM) Depressed Park windshield (w/s) wiper with remote washer pump system consists of a depressed park wiper motor and a remote washer pump mounted on the washer fluid container.

Based on the type of control switch used and whether an optional electronic printed circuit board is attached in the wiper cover, the system can serve as either a pulse type wiper-washer system or a standard type windshield wiper. Pulse timing and "demand" wash functions are controlled electronically on pulse windshield wipers.

WIPER AND WASHER OPERATION

Pulse Windshield Wiper System

Electronic logic circuits on a pulse wiper system's printed circuit board establish all timing and washer commands. When the WASH switch is pressed, the washer sprays only during the wiper arm outwipe and pulsates operation for 2-1/2 seconds. Then the wiper dry wipes for nearly 6 seconds before shutting off. See Pulse Wiper Operation Chart, Fig. 3, for a brief description of pulse wiper system operation.

If the WASH switch is pressed for more than one second, a (demand) wash is performed for as long as the switch is depressed. This wash action is followed by 6 seconds of dry wipes before shut-off. With the control switch in the LO or HI speed position, the respective

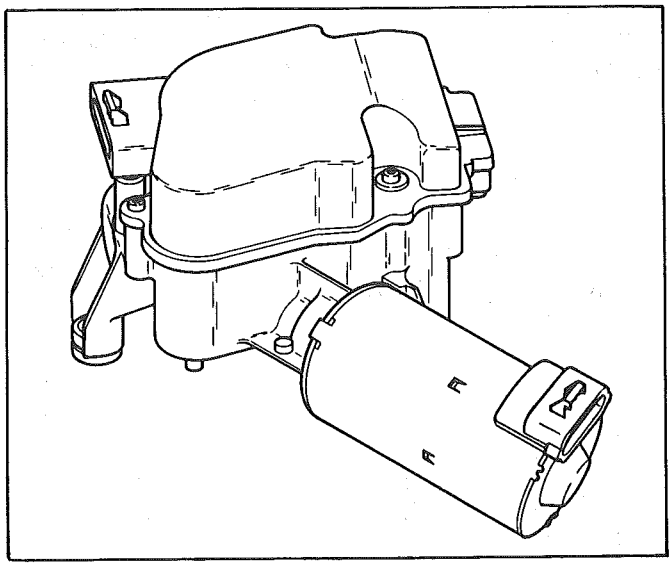


Fig. 1 Wiper Motor

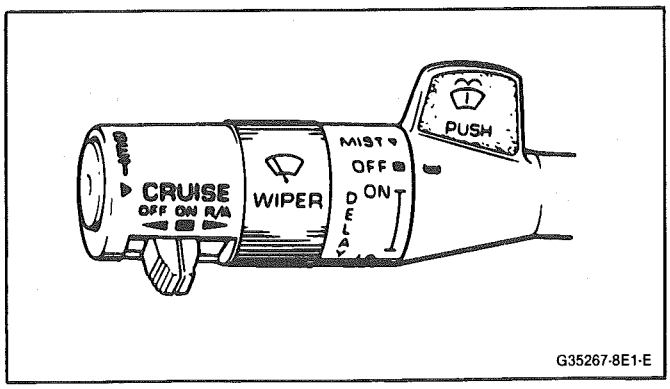


Fig. 2 Wiper-Washer Control Switch

brush circuit (Fig. 12) is completed to the (+) 12 volts DC source and the wiper motor runs at that particular speed setting.

Moving the switch to the PULSE mode operates the wiper motor intermittently and the delay can be varied by moving the switch back and forth in the Delay Mode. An instantaneous wipe can be obtained by moving the switch to the MIST position. If the switch is pressed continually, a continuous wiping action will be performed. See Figs. 14, 15, and 16.

DIAGNOSIS

DIAGNOSTIC PROCEDURES

The following procedures assume that the service technician has checked:

- the continuity of circuit harness wiring,
- that the wiper-motor assembly-to-dash mounting hardware is tight,
- circuit fuses, and
- that the washer hoses are clear, not kinked, disconnected or broken.

See Fig. 12 for wiper circuit diagrams.

WIPER MOTOR

Check motor operation before removing wiper assembly from the car. Disconnect wiring harness from wiper assembly before performing the following checks:

1. Apply a (+) 12 volt DC (source) voltage to wiper connector pins as shown in Fig. 13. If the motor runs in all operating modes (LO, HI; PARK & PULSE), perform the voltage and continuity wiper switch tests as shown on Figs. 14, 15 and 16.
2. If the wiper motor does not run in any one or all of the operating modes, refer to the Wiper-Washer Motor Diagnostic Procedures Reference (Fig. 4).

WASHER PUMP

Check washer pump operation before removing washer pump from the car. Disconnect (cover) wiring harness connection to wiper cover connector. Then apply a (+) 12 volt DC (source) voltage to wiper terminals as shown on Fig. 17.

1. If washer pump motor does not run or does not pump water, replace washer pump. See On-Car Service procedures for "Washer Pump Replacement."
2. If washer pump motor runs and pumps water, the problem is in the wiper switch. See Fig. 16 for switch test procedures.

WIPER SWITCH POSITION	WASH BUTTON POSITION		
	OFF	BUTTON HELD LESS THAN ONE SECOND	BUTTON HELD MORE THAN ONE SECOND
OFF	Wiper and washer are off—blades are at park position.	Wiper starts, runs and washes in low speed. Fluid pulses approx. 2½ seconds, followed by approx. six seconds of drying wipes. Wiper then returns to park and shuts off.	Wiper starts, runs and washes in low speed. Fluid flows as long as button is held, then approx. six seconds of drying wipes and wiper returns to park position and shuts off.
DELAY	Wiper runs one low speed wipe. Blades stop at inner wipe position, next wipe is delayed for period of time of 0-25 seconds (depending upon rheostat setting), then cycle repeats.	Delay function is overridden and followed by wash and dry cycle above. Blades then return to inner wipe position and delay function resumes.	Delay function is overridden and followed by wash and dry cycle above. Blades then return to inner wipe position and delay function resumes.
LOW	Wiper runs in continuous low speed.	Wiper continues to run in low during wash cycle above, and remains in low speed after wash.	Wiper continues to run in low during wash cycle above, and remains in low speed after wash.
HIGH	Wiper runs in continuous high speed.	Same as low speed wash above except motor running in high speed.	Same as low speed wash above except motor running in high speed.

Fig. 3 Pulse Wiper Operation Chart

WIPER-WASHER MOTOR DIAGNOSTIC CHART

PROBLEM	PROCEDURE
Pump inoperative	1
Washer pumps continuously	2
Wiper motor inoperative	3
Intermittent wiper operation in "Pulse", "Lo" or "Hi" modes	4
Wiper will not park	5
No delay, or continuous in delay (motor operates in "Lo" and "Hi" modes)	6
Wiper stays in "Delay" during wash cycle started in "Delay" mode	7
No "Lo" mode	8
No "Hi" mode or blades cycle in and out of park with switch in "Hi"	9
Blades cycle in and out of park position when wiper is shut off	10

Fig. 4 Wiper-Washer Diagnostic Chart

ON-CAR SERVICE

WASHER PUMP REPLACEMENT

Fig. 21

Remove or Disconnect

1. Washer solvent
2. Brace
3. Container screws (2)
4. Electrical connectors and washer hose
5. Washer pump motor from container

Install or Connect

1. Washer pump motor to container
2. Electrical connectors and washer hose
3. Container screws (2)
4. Brace
5. Washer solvent

Important

- Make sure new washer pump is pushed all the way into the container gasket.

WIPER COVER REPLACEMENT

Fig. 18

Remove or Disconnect

1. Cover screws
2. Wiper cover

Install or Connect

1. New wiper cover
2. Cover screws

Important

- Always install cover assembly with wiper in park position and drive pin in the open area of the cam.

PARK SWITCH REPLACEMENT

Remove or Disconnect

1. Wiper cover

Important

- If motor is in park position (Fig. 18), operate motor as required to remove pawl from relay slot.

2. Park switch assembly

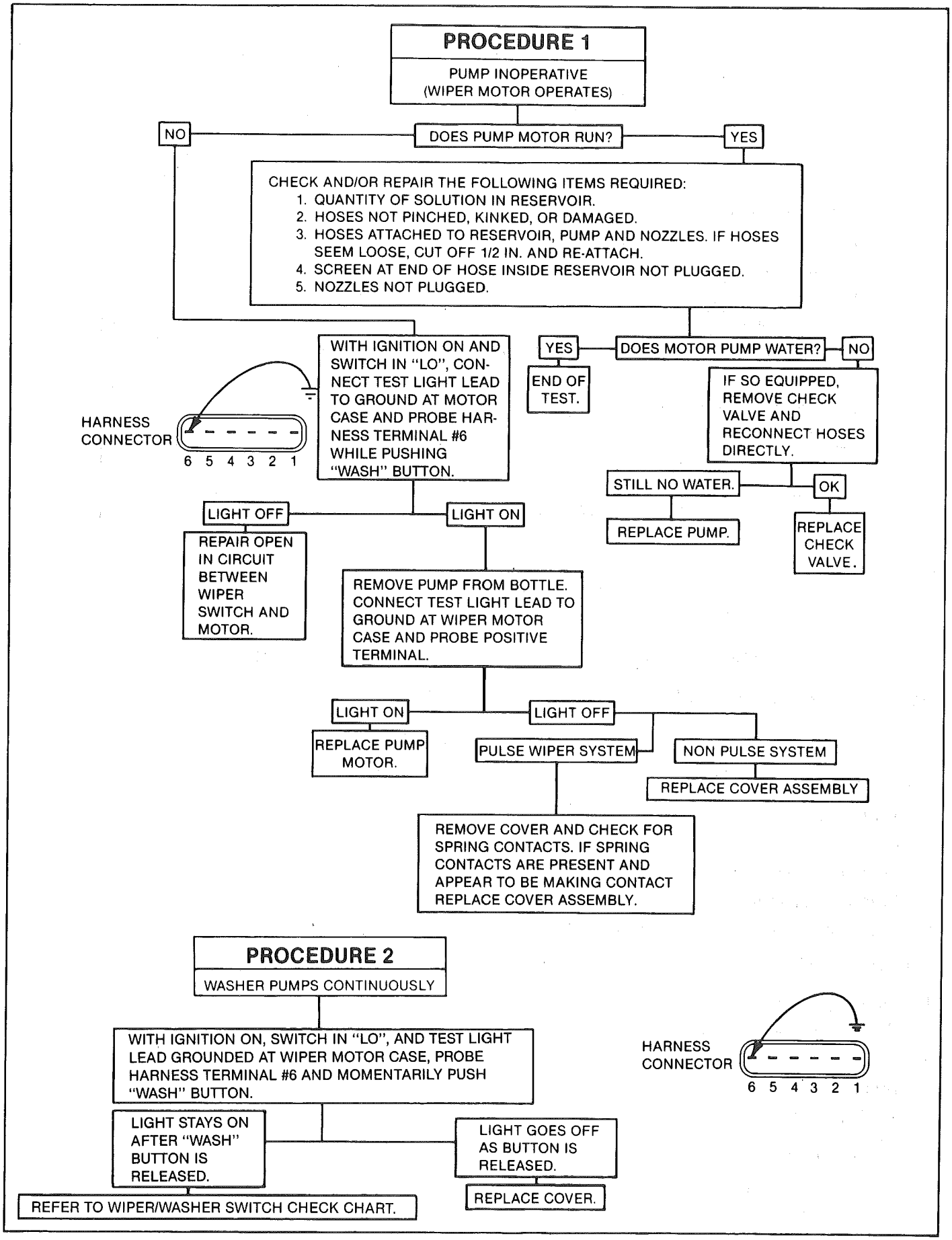


Fig. 5 Diagnostic Procedures 1 & 2

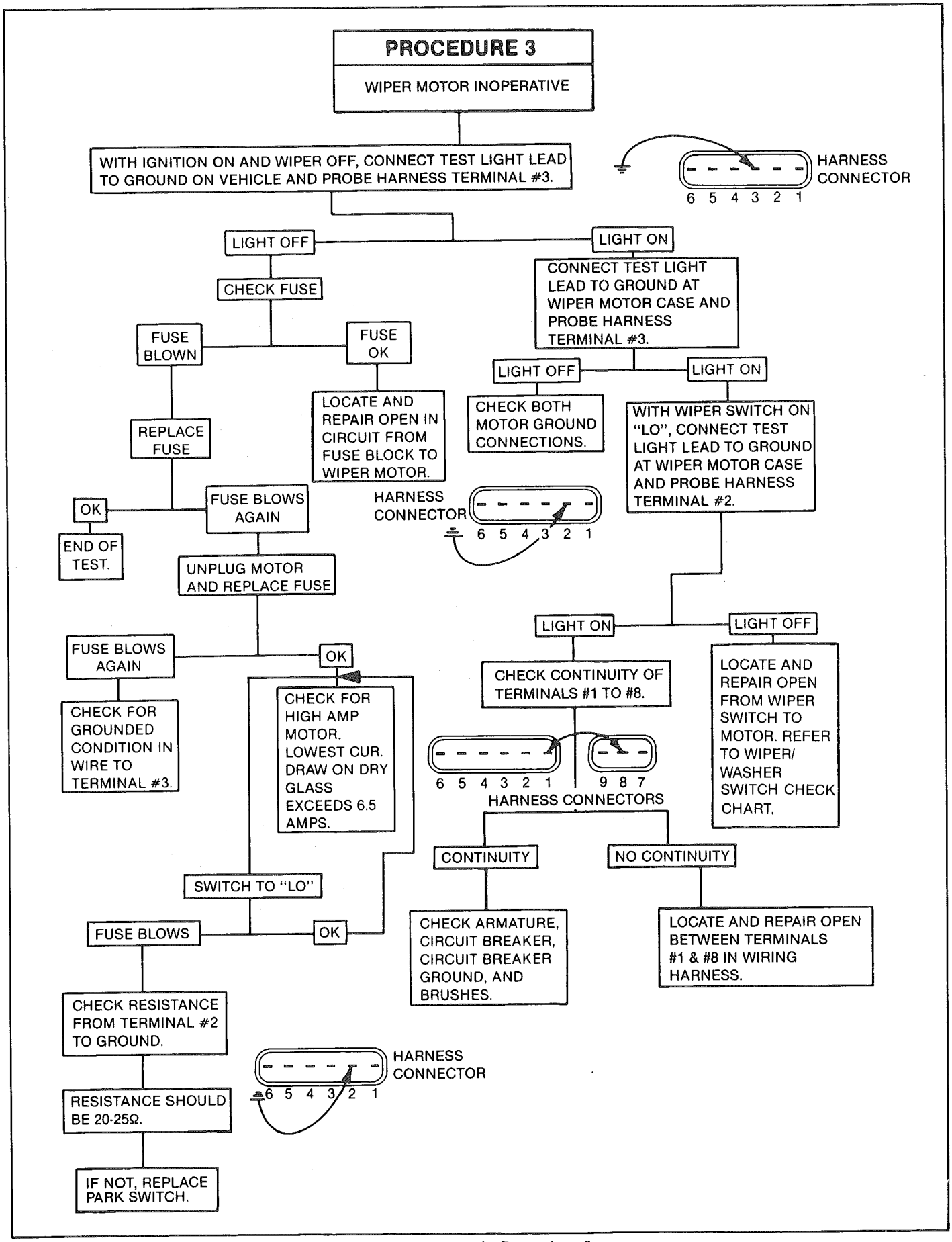


Fig. 6 Diagnostic Procedure 3

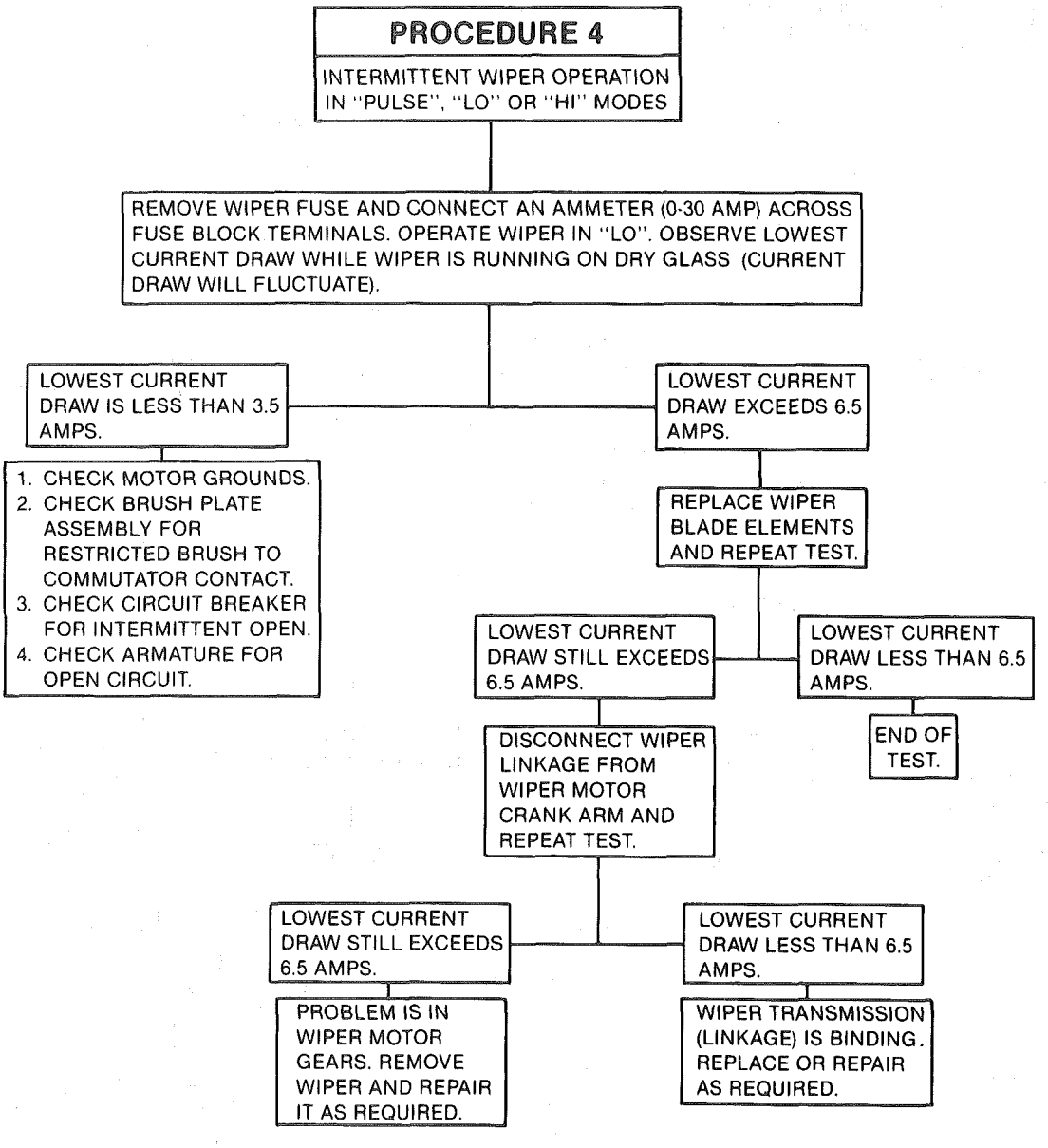


Fig. 7 Diagnostic Procedure 4

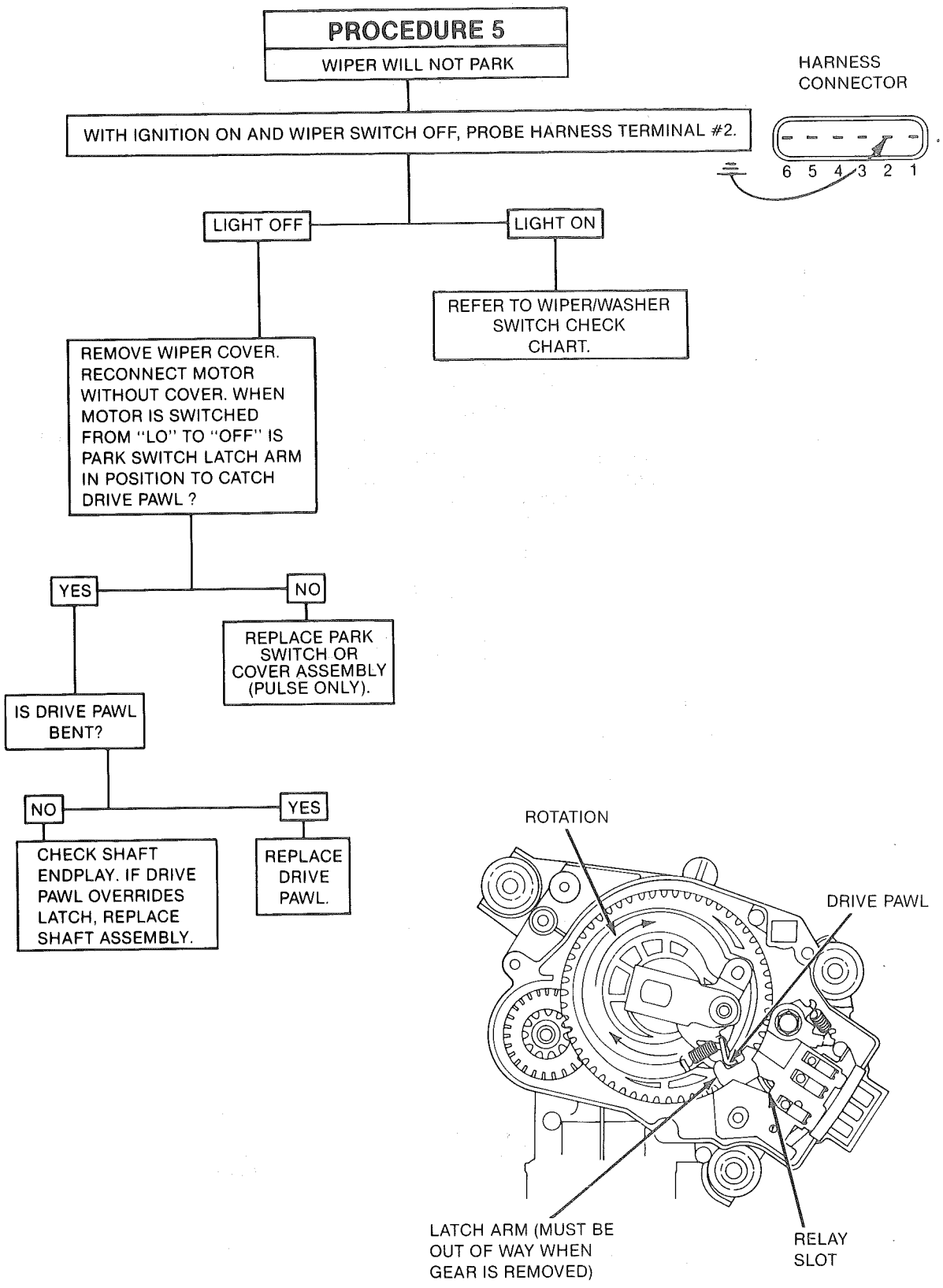


Fig. 8 Diagnostic Procedure 5

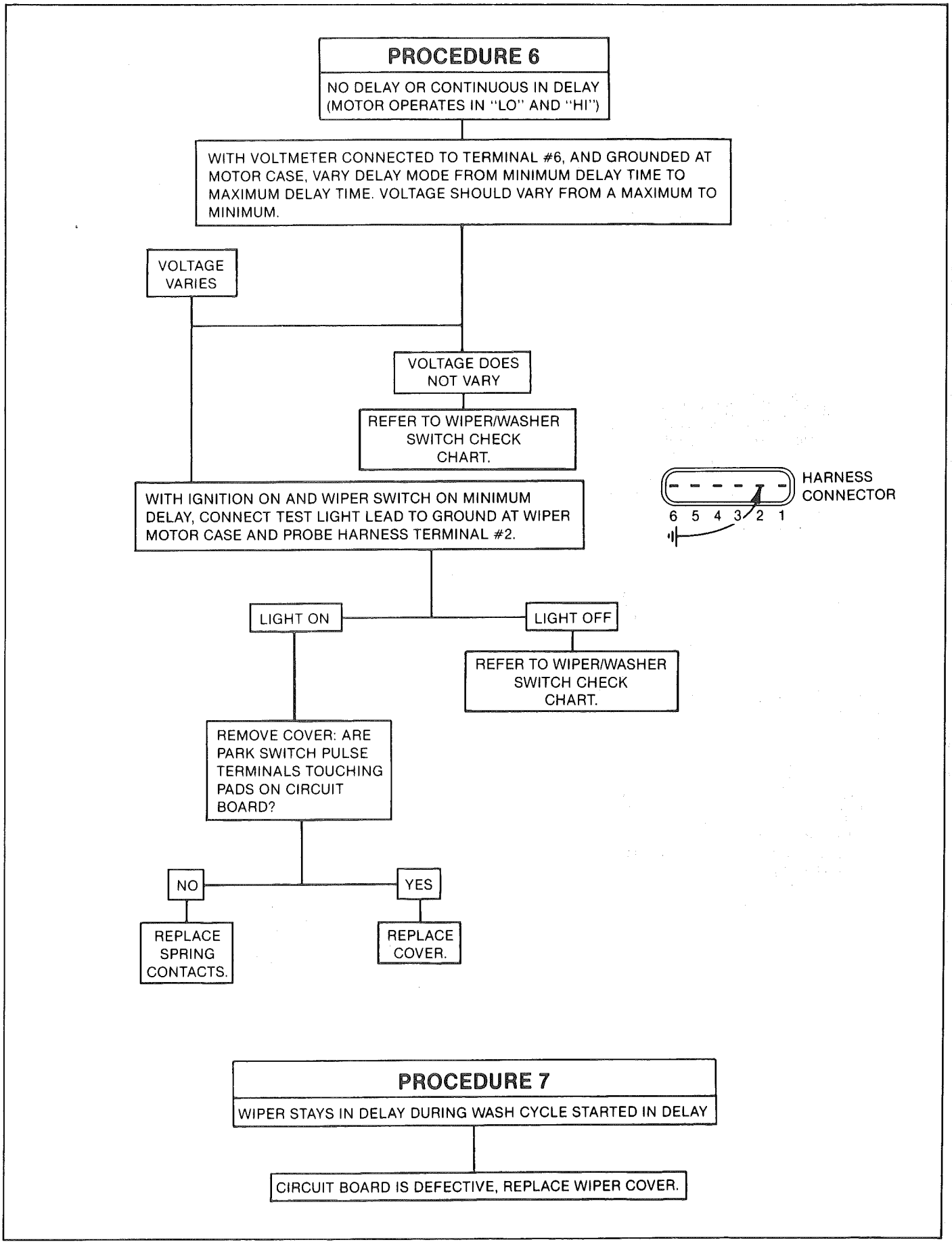


Fig. 9 Diagnostic Procedures 6 & 7

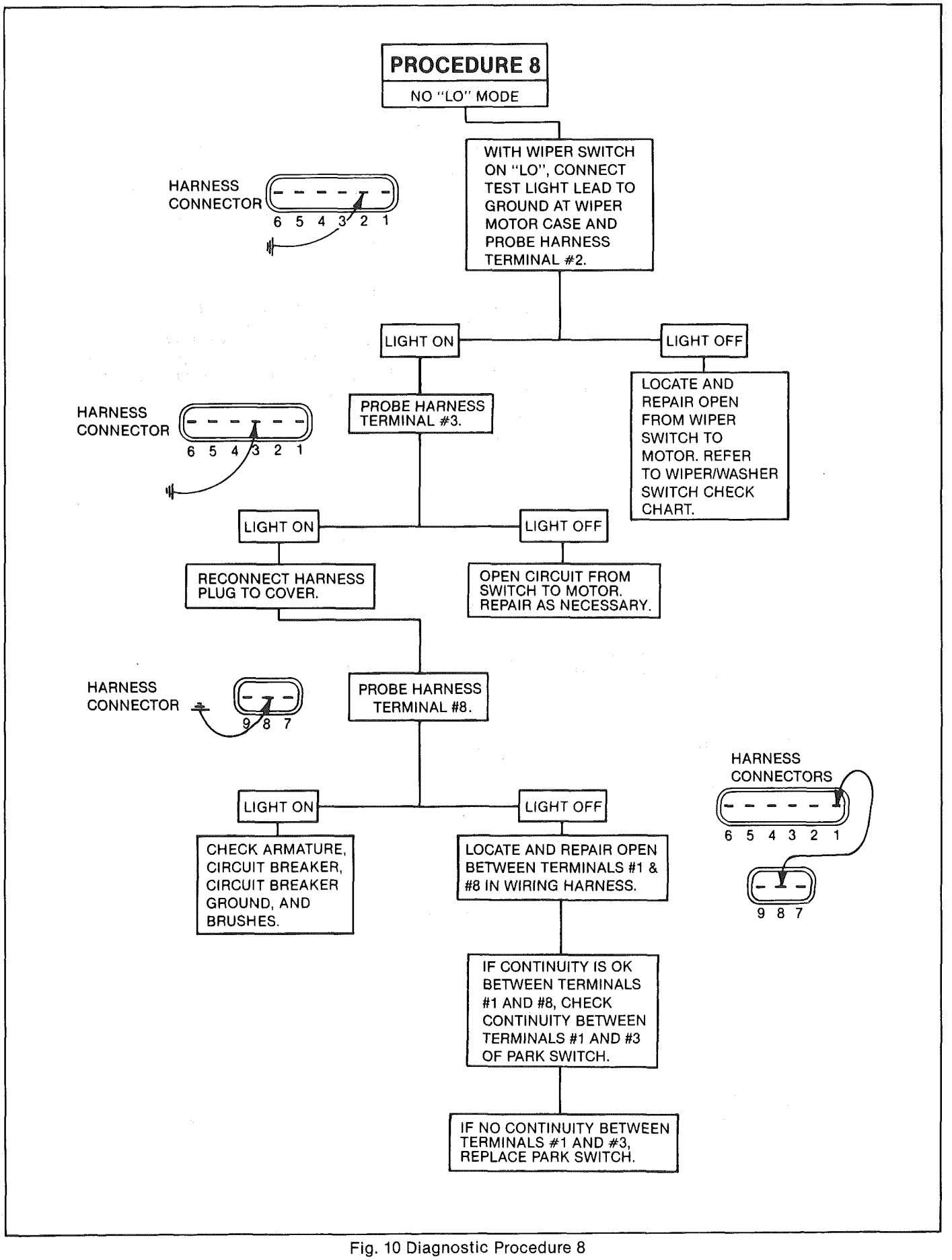


Fig. 10 Diagnostic Procedure 8

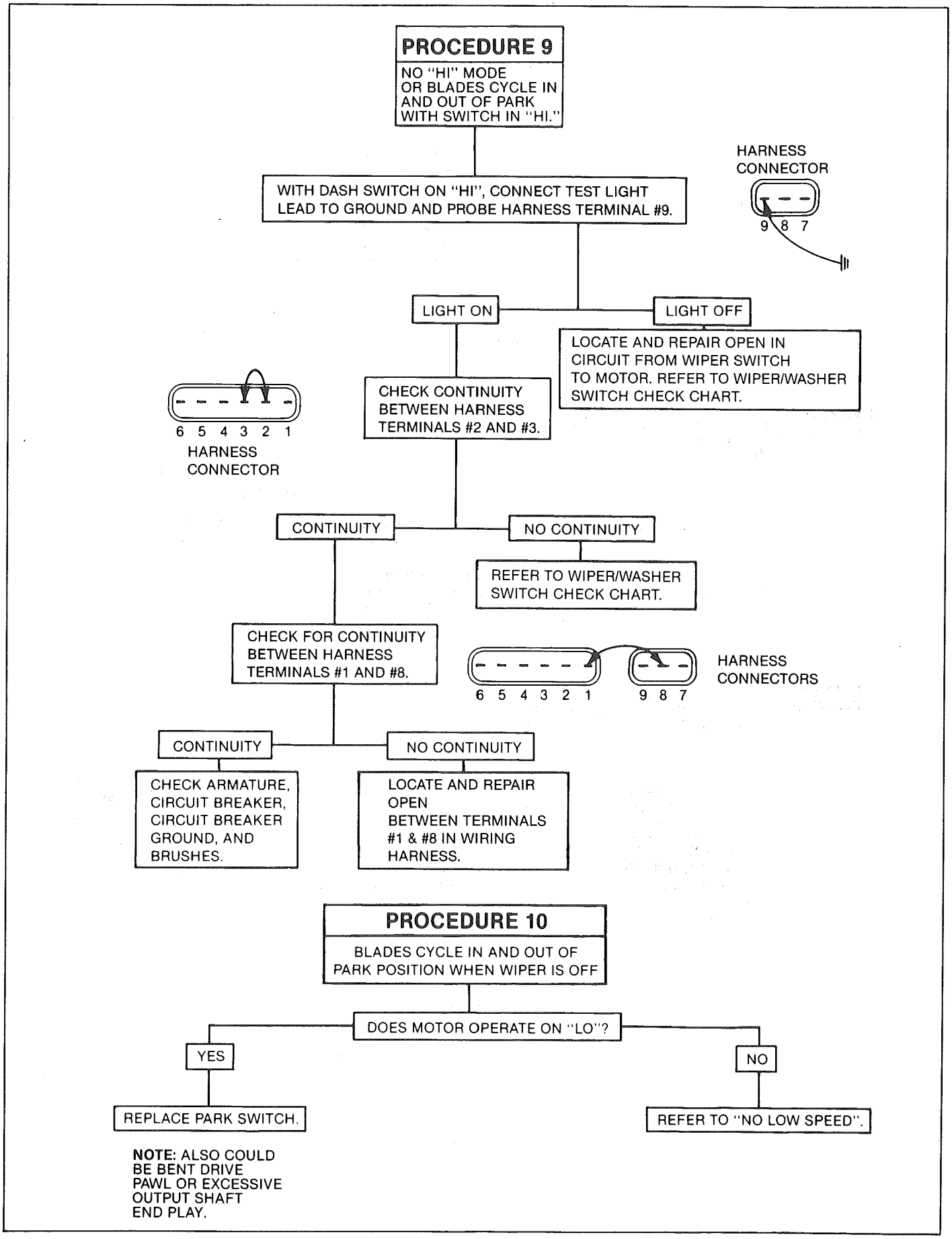


Fig. 11 Diagnostic Procedures 9 & 10

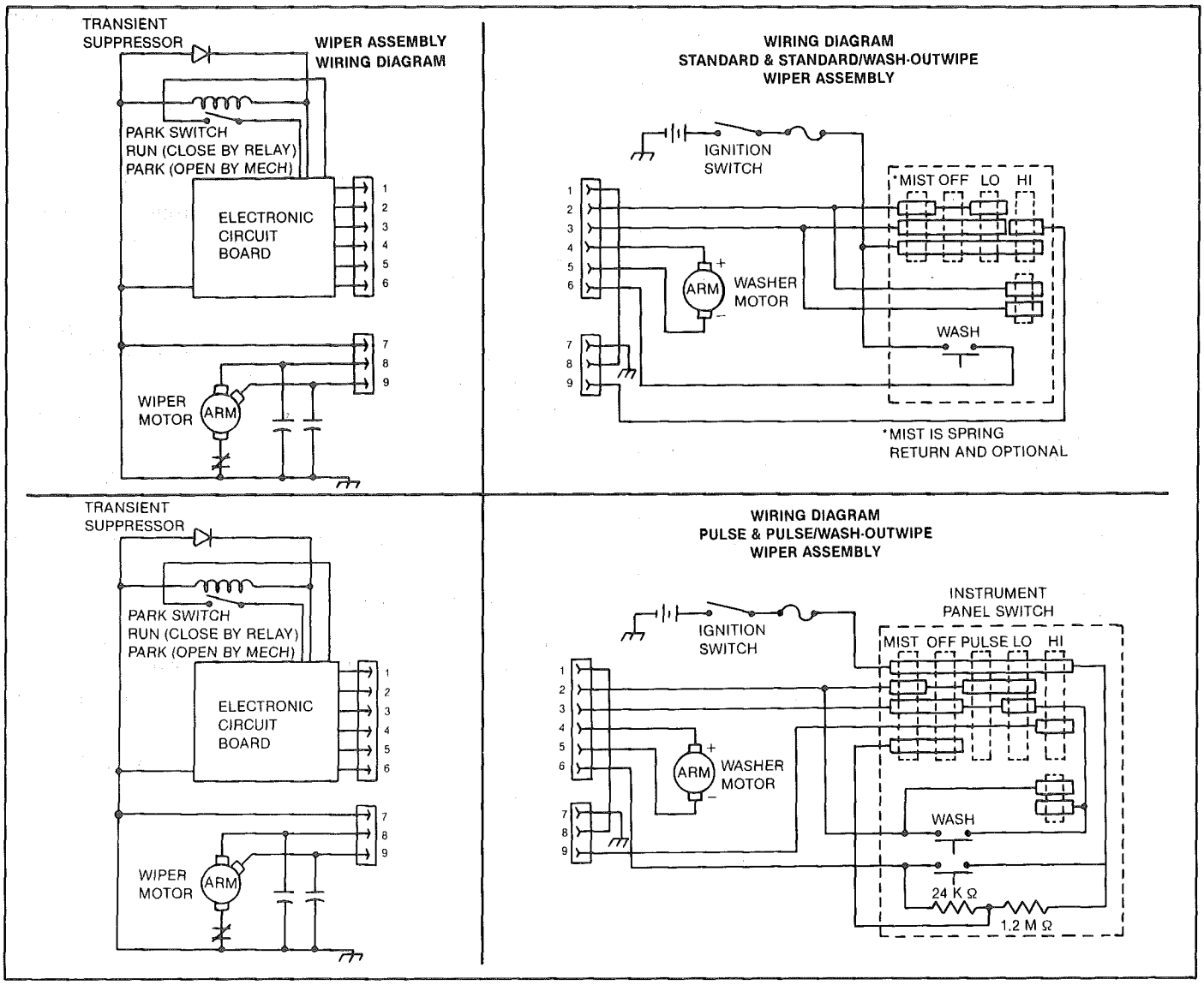


Fig. 12 W/S Wiper-Washer Circuit Diagrams

Install or Connect

1. New park switch assembly (standard switch has no extra terminals. Pulse switch requires them).
2. Follow "Wiper Cover Replacement" procedure carefully.

WIPER MOTOR REPLACEMENT

Remove or Disconnect

1. L.H. and R.H. wiper arms
2. Cowl cover
3. Wiper arm drive link from crank arm
4. Electrical connectors
5. Wiper motor attaching bolts
6. Wiper motor guiding crank arm through hole

Install or Connect

1. Wiper motor guiding crank arm through hole
2. Wiper motor attaching bolts
3. Electrical connectors
4. Wiper arm drive link to crank arm
5. Cowl cover
6. L.H. and R.H. wiper arms

WIPER TRANSMISSION

Fig. 19

Remove or Disconnect

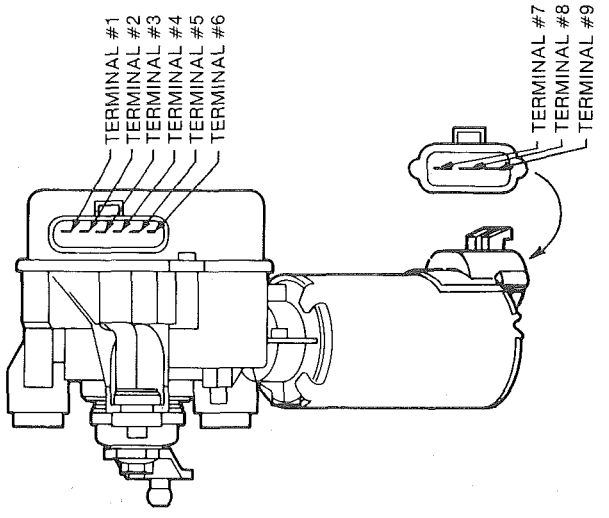
1. Raise hood.
2. Right and left wiper arm and blade assemblies

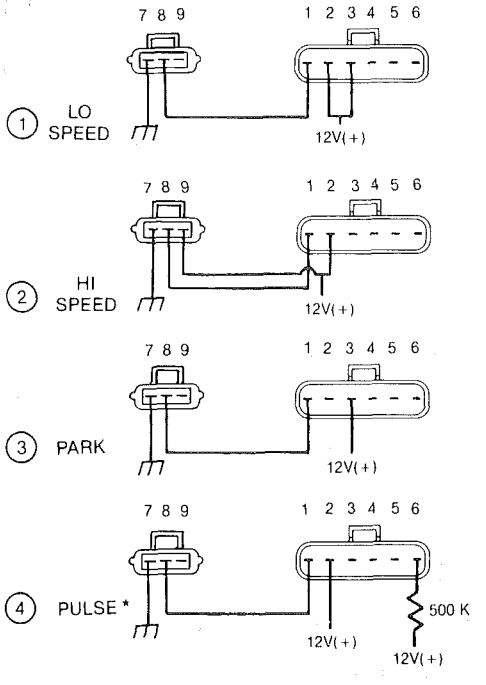
NOTE: THE FOLLOWING PROCEDURES ASSUME THAT THE TECHNICIAN HAS CHECKED THE FOLLOWING:

1. CONTINUITY OF ALL HARNESS WIRES
2. WIPER MOTOR TO DASH MOUNTING SCREWS TIGHT
3. FUSES

WIPER MOTOR

CHECK FOR MOTOR OPERATION BEFORE REMOVING FROM VEHICLE. DISCONNECT ALL WIRING FROM WIPER AND PERFORM THE FOLLOWING CHECKS IN THIS ORDER:





IF WIPER MOTOR FUNCTIONS IN ALL MODES, GO TO WIPER/WASHER SWITCH CHECK CHART.

*IF A STANDARD TYPE MOTOR IS WIRED FOR THE PULSE CHECK, THE PARK RELAY WILL CLICK SHUT BUT THERE WILL BE NO OBSERVABLE MOTOR ACTION.

Fig. 13 Wiper On-Car Check

3. Loosen (do not remove) attaching nuts securing transmission drive link(s) to motor crank arm
4. Air inlet screw/panel
5. Transmission drive link(s) from the motor crank arm
6. Transmission-to-body attaching screws
7. Transmission and linkage assembly by guiding it through access hole in shroud upper panel

Install or Connect

1. To install transmission and linkage assembly, position assembly in plenum chamber through the shroud upper panel openings.
2. Loosely install transmission to body attaching screws.
3. Transmission drive link to motor crank arm and tighten attaching nuts to 7 N·m (64 lbs. in.)
4. Align transmission and tighten attaching screws to body.
5. Air inlet screen/panel
6. Wiper arm and blade assemblies and adjust as described under "Wiper Arm Adjustment"
7. Check wiper operation, wipe pattern and park position.
8. Cowl vent screen or cowl upper panel and screen
9. Check washer nozzle alignment.

WIPER ARM

Fig. 20

Remove or Disconnect

1. With wipers "On", turn ignition "Off" when wiper arm is at the mid-wipe position.
2. Lift wiper arm from windshield and pull retaining latch.
3. Arm from transmission shaft

Install or Connect

1. Arm on transmission shaft
2. Push retaining latch in and return arm to windshield.
3. Park wipers

WIPER ARM ADJUSTMENT

Adjust

Adjustment should not be required. However, if adjustment is required, it can be performed as follows:

1. Remove the right arm and blade assembly.
2. Loosen, do not remove, the transmission drive link-to-motor crank arm attaching nuts.

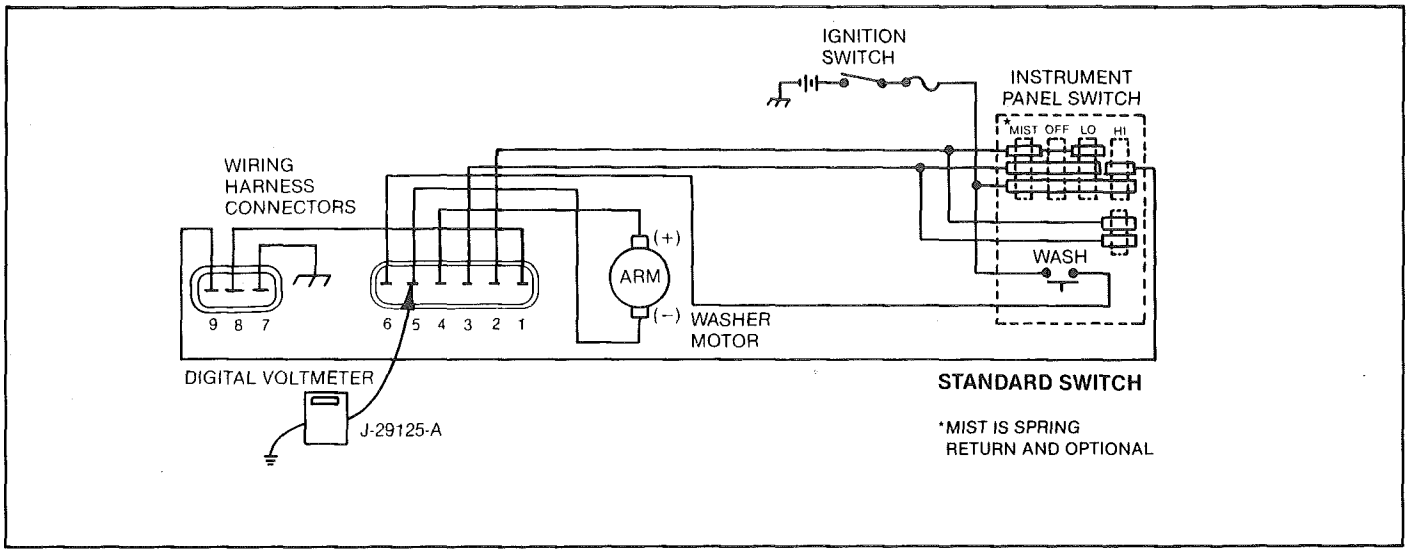


Fig. 14 Testing Standard W/S Wiper-Washer Switch

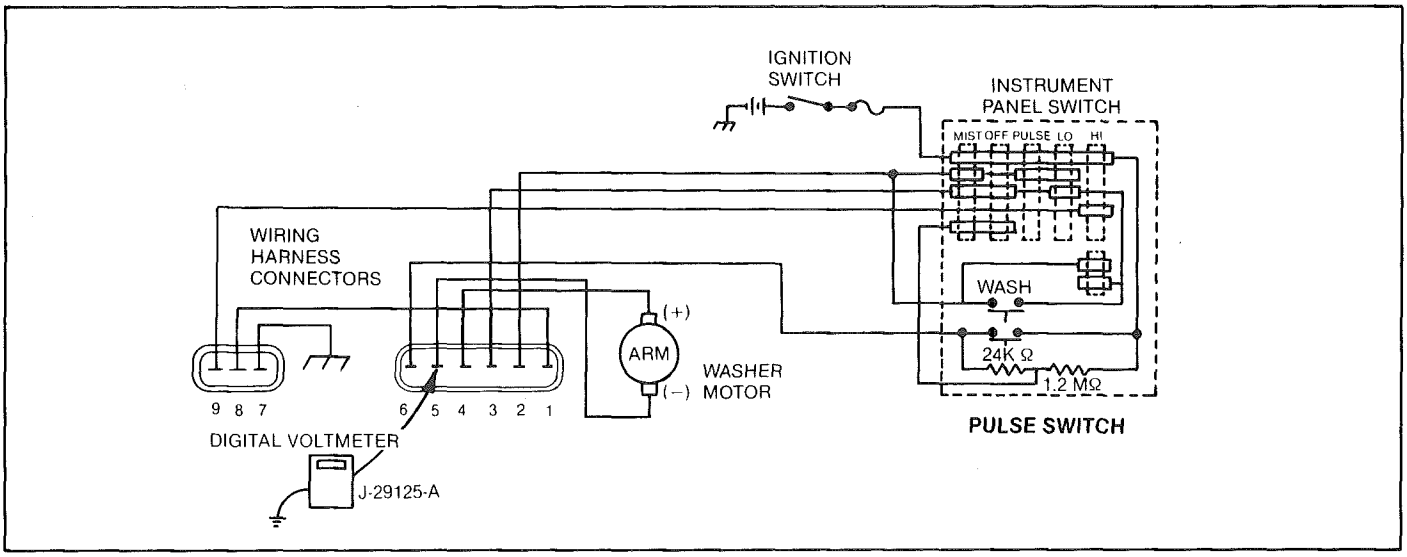


Fig. 15 Testing Pulse W/S Wiper-Washer Switch

3. Rotate the left arm assembly to a position slightly below the blade stops.
4. Tighten the attaching nuts on the transmission drive link(s) to motor crank arm 7.5 N·m (66 lbs. in.).
5. Position the right arm and blade assembly slightly below the blade stop and install arm assembly to transmission shaft.
6. Lift the right and left arm and blade assemblies over the stops.
7. Check wipe pattern and park position. Dimension A is 18 mm (11/16″) from top of driver's blade on outwipe to paint line and 6 mm (15/64″) from edge of glass in park position.

The correct park position and outwipe dimensions are determined with the wipers operating at low speed on a wet glass.

WIPER BLADE

Fig. 20

Remove or Disconnect

Anco®

1. Place wiper arm at the mid-wipe position, see "Wiper Arm"
2. Lift blade retainer.
3. Wiper blade

Trico®

1. Place wiper arm at the mid-wipe position, see "Wiper Arm".
2. Disengage blade retainer with a small screwdriver.
3. Wiper blade

	SWITCH MODE / TERMINAL #	MIST	OFF	PULSE	LO	HI †	WASH
PULSE	1	C	C	C	C	C	C
	2	B(+)	—	B(+)	B(+)	—	*B(+)
	3	B(+)	B(+)	—	B(+)	—	*B(+)
	4	—	—	—	—	—	—
	5	—	—	—	—	—	—
	6	10-12V	10-12V	10-12V	10-12V	10-12V	B(+)
	7	GROUND	GROUND	GROUND	GROUND	GROUND	GROUND
	8	C	C	C	C	C	C
	9	—	—	—	—	B(+)	—
STANDARD	1		C		C	C	C
	2		—		B(+)	—	*B(+)
	3		B(+)		B(+)	—	*B(+)
	4		—		—	—	—
	5		—		—	—	—
	6		—		—	—	B(+)
	7		GROUND		GROUND	GROUND	GROUND
	8		C		C	C	C
	9		—		—	B(+)	—

C = CONTINUITY † TERMINALS #2 & #3 CONNECTED TOGETHER. *EXCEPT ON HI.

Fig. 16 Wiper-Washer Switch Check Chart

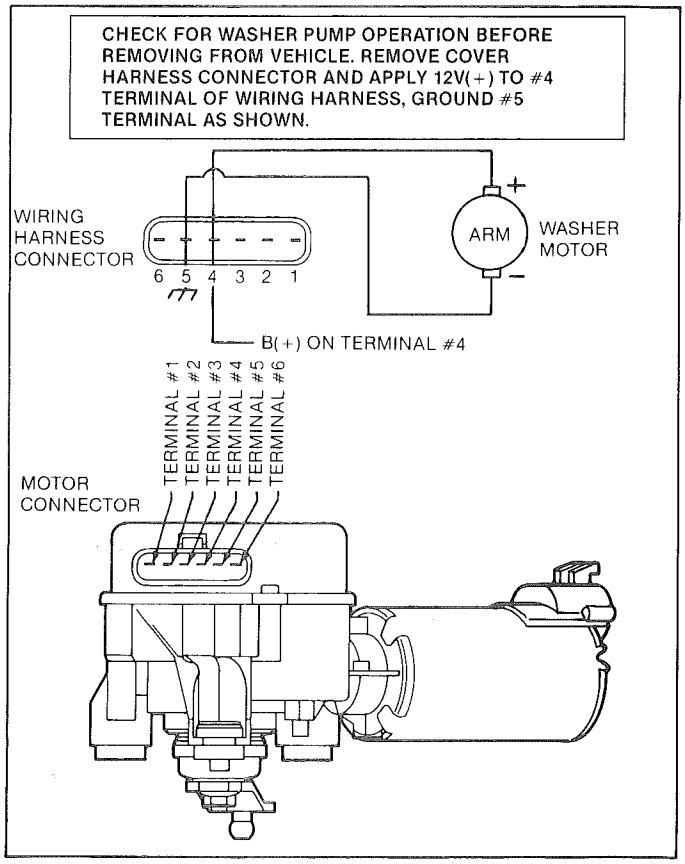


Fig. 17 Washer Pump On-Car Check

Install or Connect

Anco® and Trico®

1. Wiper blade onto wiper arm
2. Park wipers.

WIPER BLADE INSERT

Fig. 20

Remove or Disconnect

Anco®

1. Place wiper arm at the mid-wipe position, see "Wiper Arm".
2. Push down on insert retainer.
3. Insert with retainer

Trico®

1. Place wiper arm at the mid-wipe position, see "Wiper Arm".
2. Squeeze insert retainer together.
3. Insert

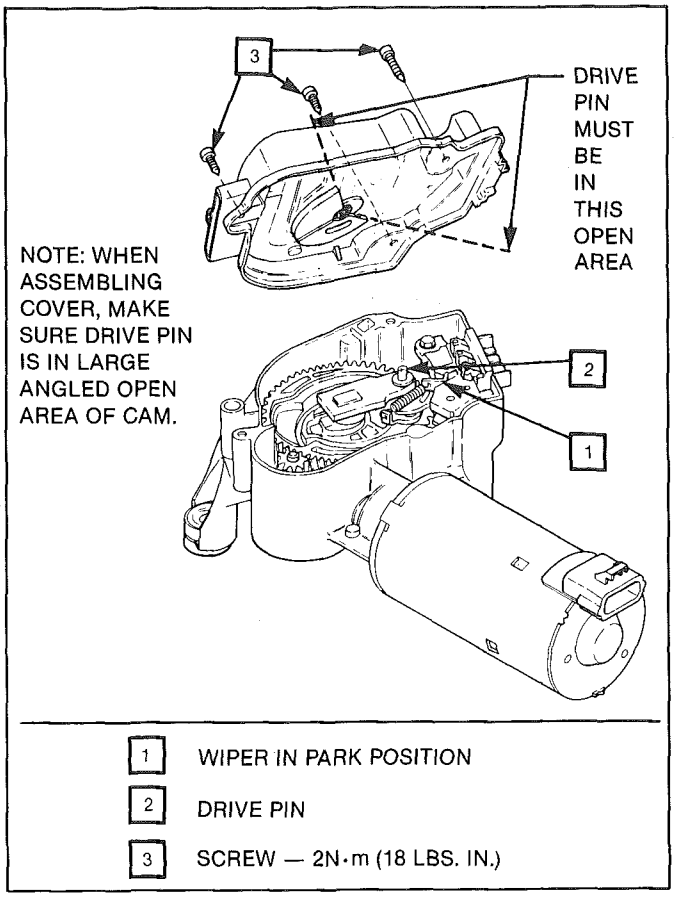


Fig. 18 Pulse Wiper (Cover Removed)

Install or Connect

Anco® and Trico®

1. Insert with retainer
2. Engage retainer.
3. Park wiper arms.

WINDSHIELD WASHER

Fig. 21

A correctly operating windshield wiper-washer system has a spray pattern that cleans 75% of the wipe pattern (Fig. 21) within ten wiper cycles.

If the nozzles become plugged, apply air pressure. If nozzle remains plugged, the nozzle must be replaced. If the spray pattern is too low or too high on the windshield, wedge-type adjustment shims can be used. Placement of a shim under the nozzle mounting bracket will raise the pattern three degrees. Reverse installation of the same shim will lower the pattern three degrees.

UNIT REPAIR

Figs. 22 through 25

GEAR REPLACEMENT

Important

- Clamp crank arm in vise.

Remove or Disconnect

1. Crank arm retaining nut
2. Crank arm
3. Rubber seal cap
4. Thrust collar or retaining ring. (Thrust collar is on original motor. Retaining ring to be used on service motor.)
5. Shim washers
6. Shield
7. Spacer washers
8. Park switch assembly
9. Large gear
10. Inner spacer washer
11. Intermediate gear retainer
12. Intermediate gear

Disassemble

1. Drive plate and shaft assembly

Assemble

1. Drive plate and shaft assembly into new large gear

Important

- Move drive and lock pawls as required to allow their respective pins to fit in the gear pockets. Make sure drive plate is firmly against gear.

2. Intermediate gear
3. New intermediate gear retainer
4. Inner spacer washer onto large gear tube
5. Large gear (See wiper-washer mechanism lube note)
6. Spacer washer
7. Shield
8. Shim washers as required to obtain 0.03 to 0.25mm (0.001 to 0.010 in.) end play.
9. Retaining ring (in place of thrust collar on original motor)
10. Rubber seal cap
11. Crank arm

Tighten

1. Crank arm nut (in vise) to 42 N·m (31 lbs. ft.)

Inspect

1. Check for proper motor operation (See "Wiper On-Car Check").

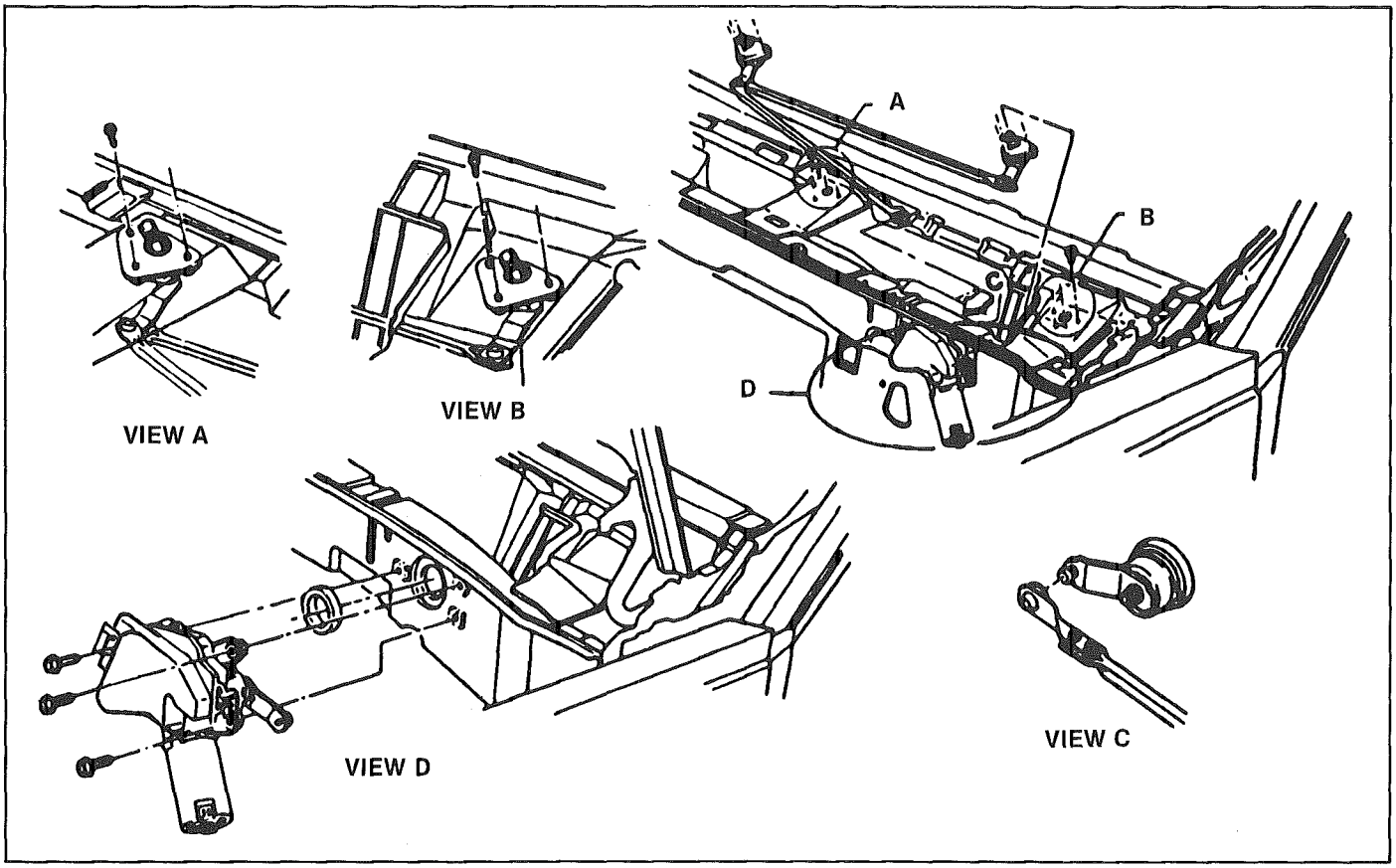
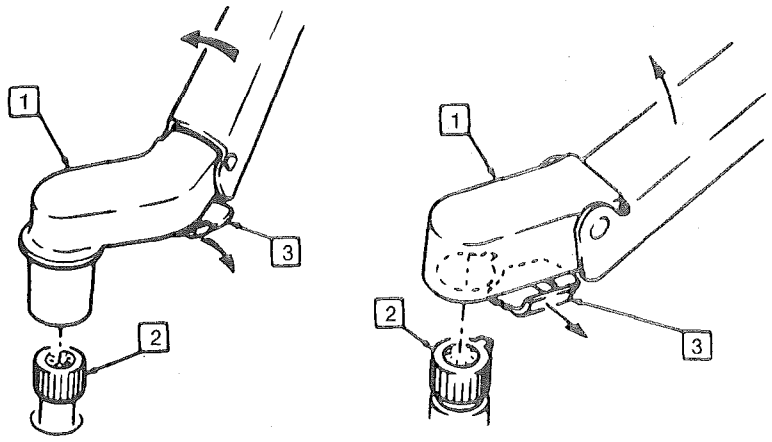
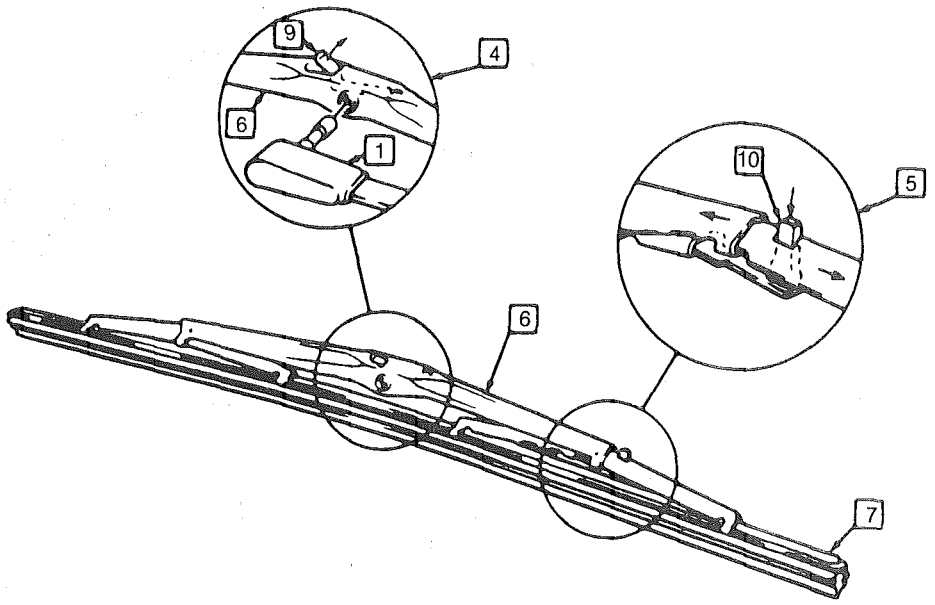


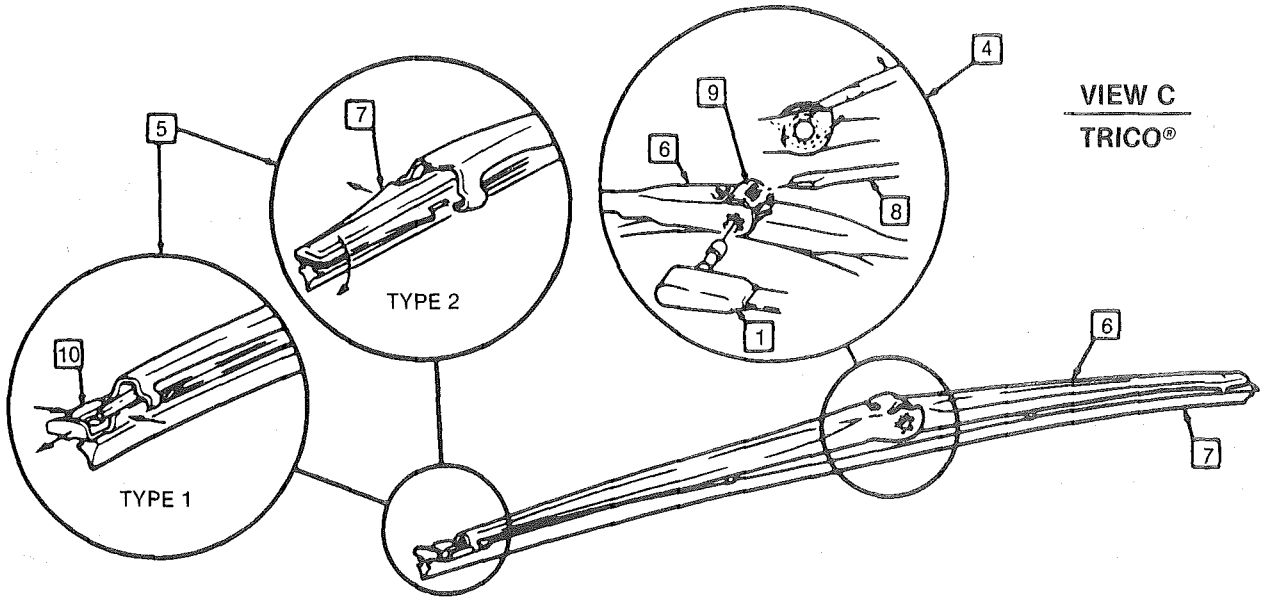
Fig. 19 Wiper Transmission (Typical)

1. WIPER ARM
2. TRANSMISSION SHAFT
3. WIPER ARM RETAINING LATCH
4. WIPER BLADE REMOVAL
5. WIPER INSERT REMOVAL
6. WIPER BLADE ASSEMBLY
7. WIPER INSERT
8. SCREWDRIVER
9. BLADE RETAINER
10. INSERT RETAINER





VIEW B
ANCO®



VIEW C
TRICO®

H36235-8E1-G-R1

Fig. 20 Wiper Arm, Blade and Insert

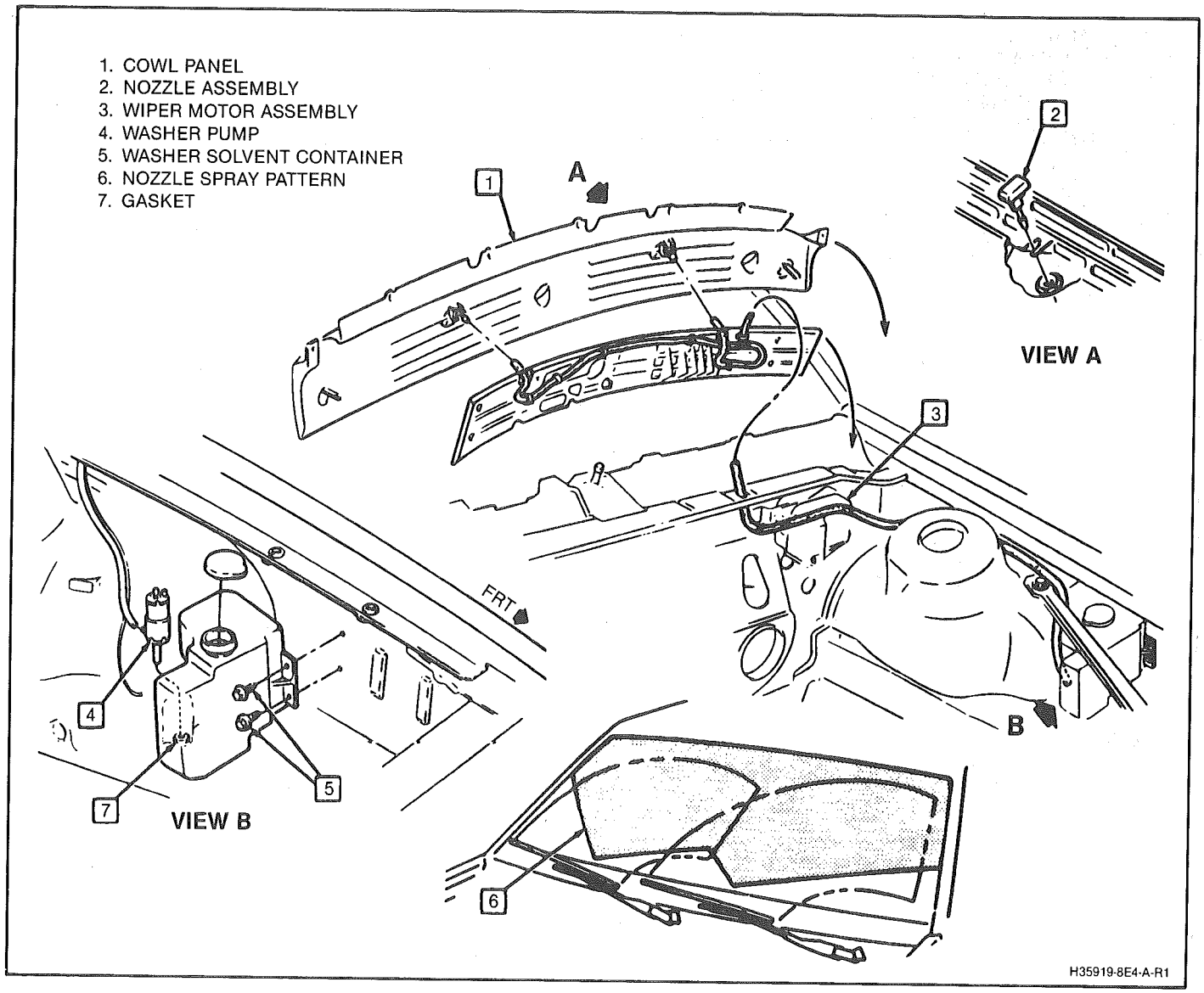


Fig. 21 Washer Nozzle and Container Mounting

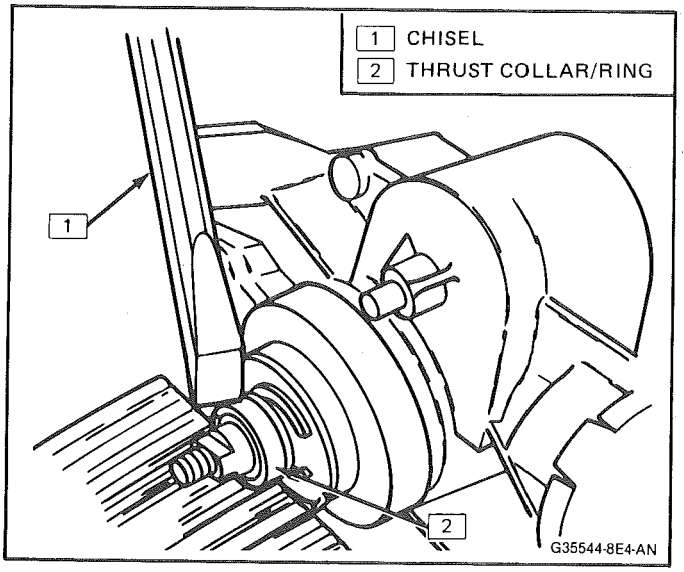


Fig. 22 Thrust Collar — Ring Removal

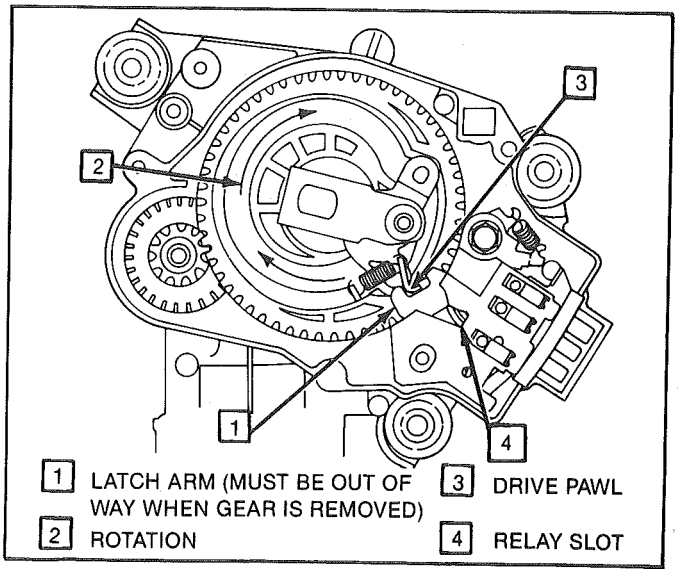


Fig. 23 Large Gear Removal

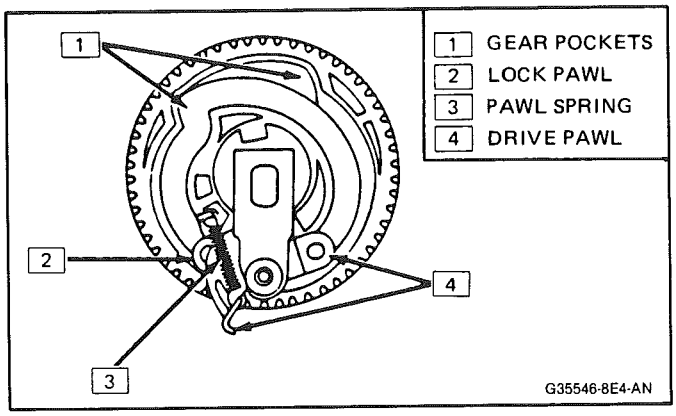


Fig. 24 Gear-Pawl Alignment

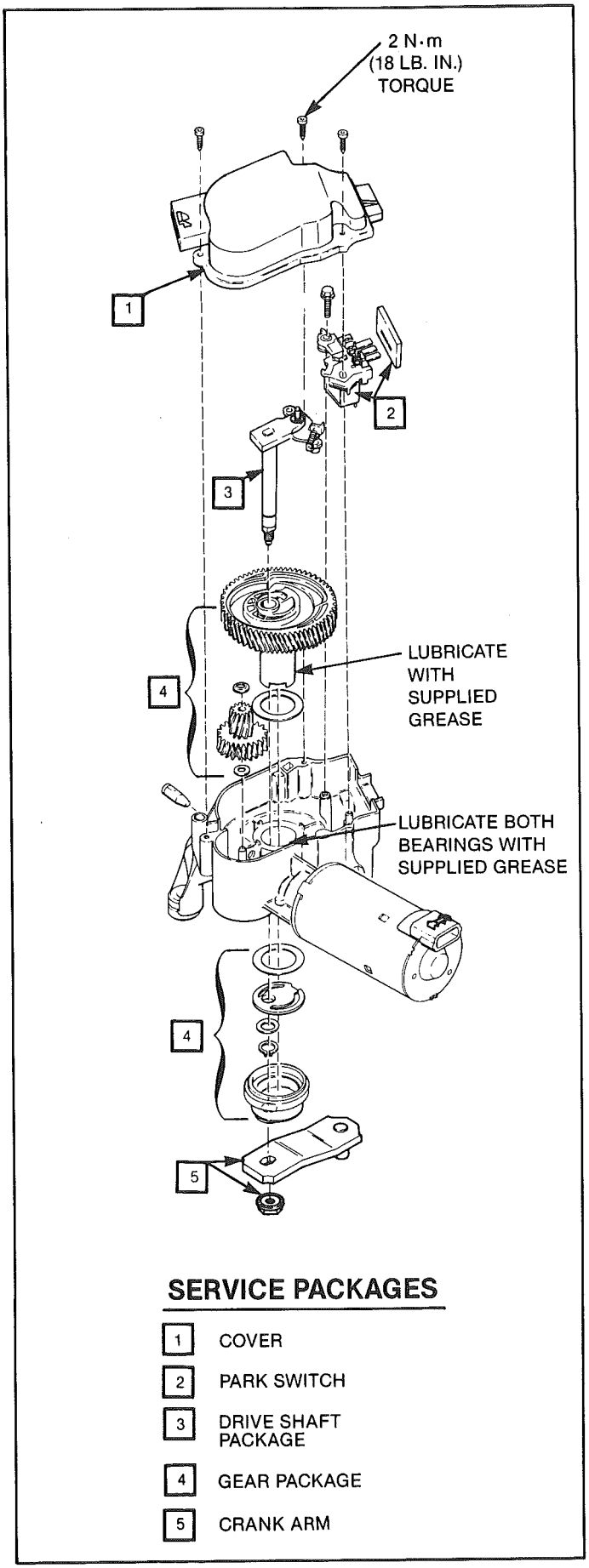


Fig. 25 Wiper-Washer Mechanism