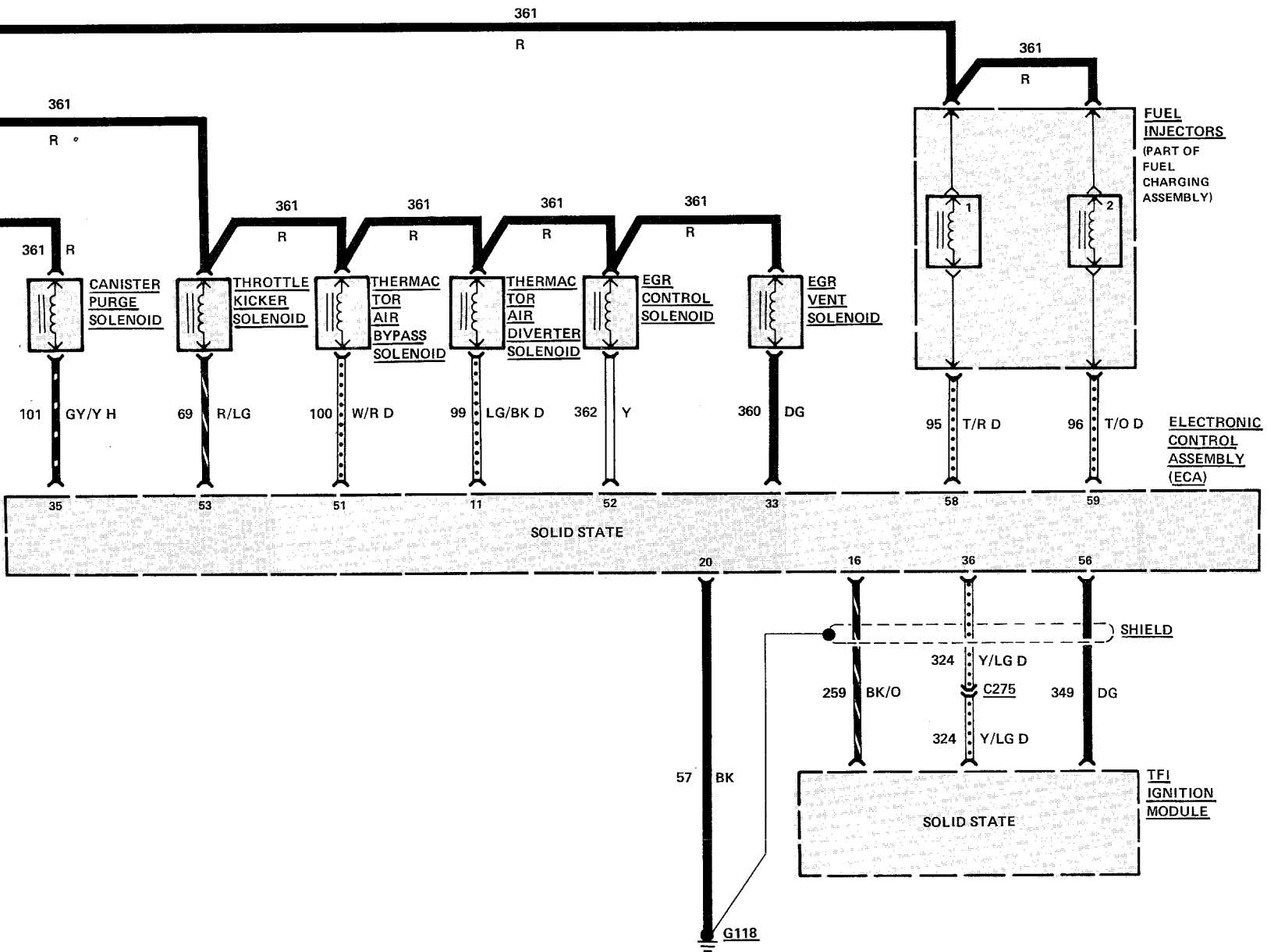
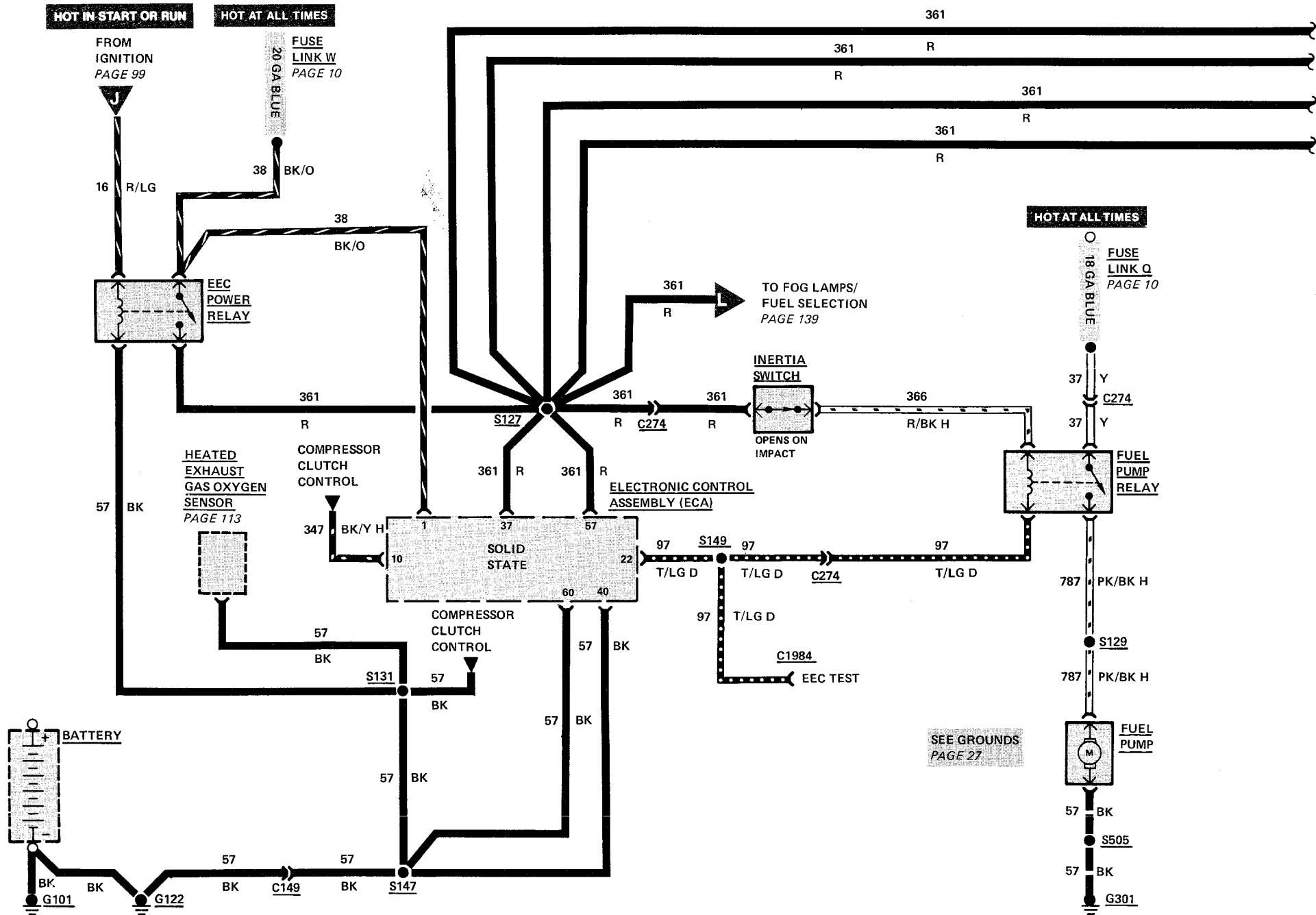
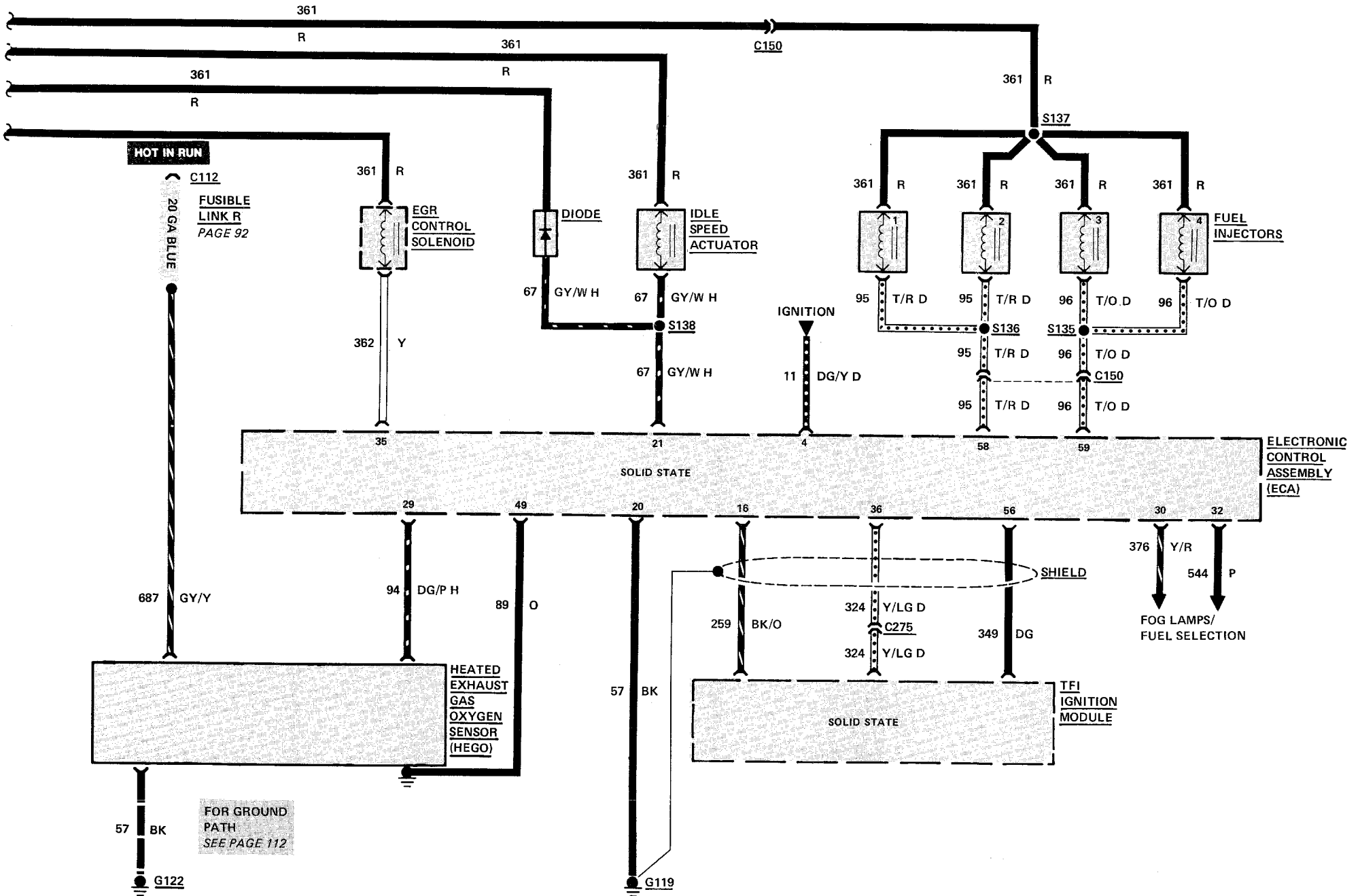


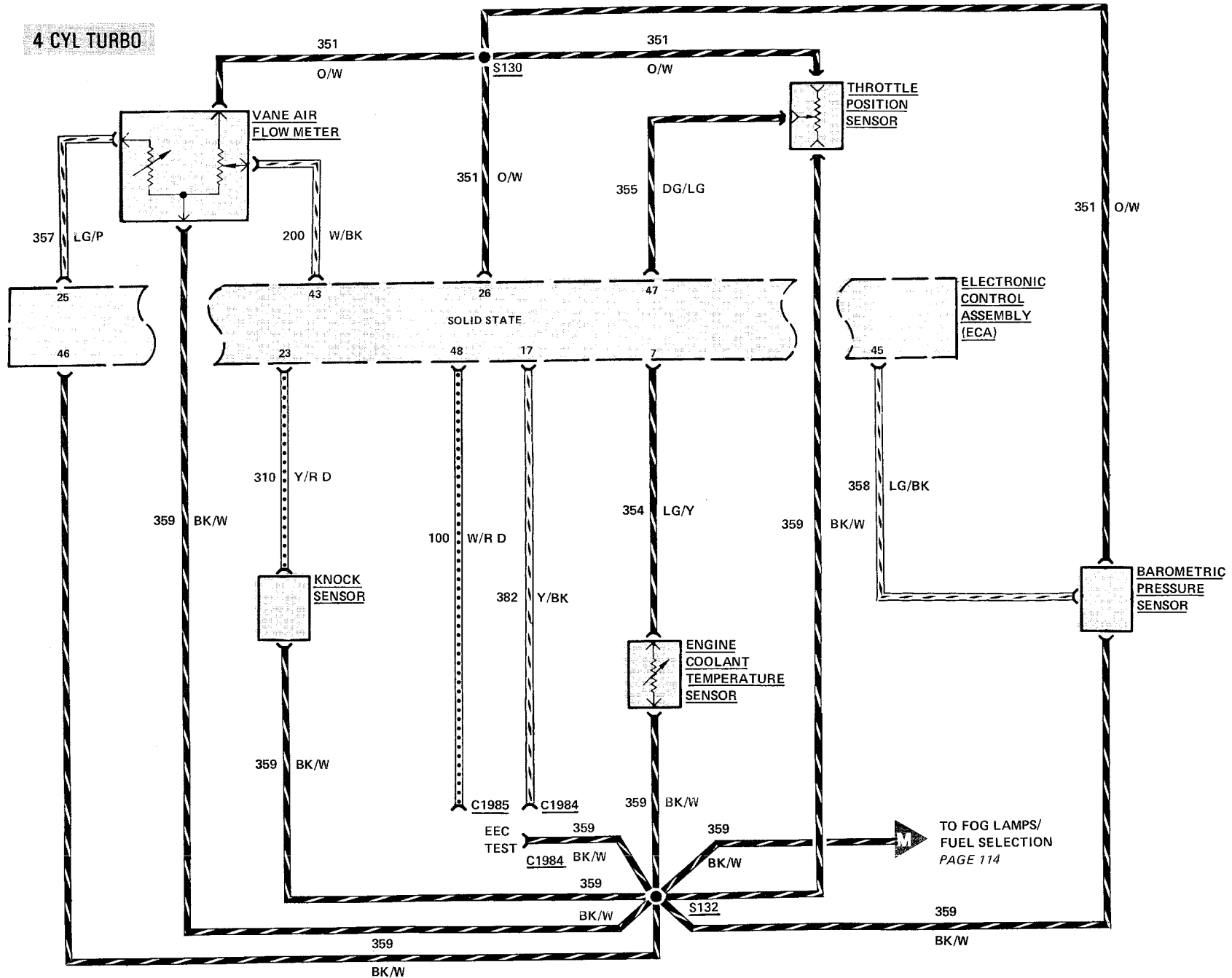
8 CYL CFI







114 ELECTRONIC ENGINE CONTROL (4 CYL TURBO)



HOW THE CIRCUIT WORKS

The **Electronic Engine Control System (EEC IV)** includes an **Electronic Control Assembly (ECA)** that receives inputs from various sensors. The ECA uses this information to provide improved fuel economy and performance, and lower exhaust emissions.

The **EEC SYSTEM** has a special **Distributor** that has no magnetic pickup or advance mechanisms. Instead, all ignition timing is controlled by the **ECA**.

The **ECA** receives engine timing information from the **Distributor** through the **TFI Ignition Module**. The **ECA** uses this information for spark timing and advance.

4 CYL 50 STATES

Carburetion

The 4 CYL 50 STATES EEC system applies the precision of electronic control to the basic principles of carburetion. Fuel/air ratio is controlled by the **Control Solenoid**, which positions the fuel control rod on command of the **ECA**. The **Idle Speed Motor** controls fuel flow in idle conditions.

The **Canister Purge Solenoid** controls the flow of vapors from the canister to the intake manifold during various engine operating modes.

Thermactor Air

The efficiency of the catalytic converter is dependent upon the temperature and chemical make-up of the exhaust gases. To meet these requirements, an air supply system called **Thermactor Air** is provided. Depending on engine conditions sensed by the **ECA**, thermactor air is sent to one of three places.

With the **Thermactor Air Diverter Solenoid** in normal (operated) position, thermactor air flows to the catalytic converter. During engine

COMPONENT LOCATION

	Page- Figure	Color	Terminals
Barometric Pressure			
Sensor	RH front fender apron		124-1
Canister Purge Solenoid			
Control Solenoid	LH side of engine		
EEC Power Relay	Mounted on rear of carburetor		
EGR Control Solenoid ...	Attached to lower RH cowl near ECA.....		123-1
EGR Valve Position			
Sensor	RH front fender apron		123-2
EGR Vent Solenoid	At top of RH front of engine		
Electronic Control			
Assembly	RH front fender apron		
Engine Coolant			
Temperature Sensor	Attached to lower RH cowl		123-1
Exhaust Gas Oxygen (EGO)			
Sensor	Top of engine in front of carburetor.....		121-1
Exhaust Heat Control			
Solenoid	LH rear of engine		121-1
Fuel Injectors.....	RH side of engine compartment		
Fuel Pump	Upper LH side of engine		121-1
Fuel Pump Relay	At top of fuel tank		
Fuse Link P,W,Q	Under driver's seat		122-4
Heated Exhaust Gas			
Oxygen Sensor	At starter relay		5-4, 20-1
Idle Speed Motor.....	Lower RH side of engine on manifold		
Inertia Switch	Attached to LH side of carburetor		9-1
Knock Sensor	In floor of trunk, to left of tire well		
Manifold Charge			
Temperature Sensor	At bottom of LH rear of engine		121-1
Thermactor Air Solenoids	RH side of engine on manifold		
Throttle Kicker Solenoid	RH side of engine on manifold		9-1
TFI Ignition Module.....	RH front fender apron		
	Upper RH dash panel		
	Connected to RH side of distributor		
			121-1

(continued on next page)

warmup, the **Thermactor Air Diverter Solenoid** does not operate. Thermactor air is then diverted to the exhaust manifold.

When the **Thermactor Air Bypass Solenoid** is operated, thermactor air is dumped to the atmosphere rather than to the catalytic converter or exhaust manifold.

Sensing Devices

Various sensing devices are used to determine engine operating conditions. They provide the **ECA** with throttle, pressure, temperature, and exhaust gas information. The **Throttle Position Sensor** sends one of three

(Continued from page 115)

signals to the **ECA** to indicate closed, partially open, or wide open throttle.

The **Barometric Pressure Sensor** measures atmospheric pressure (changes with altitude) when the Ignition Switch is turned to **START** or when throttle is wide open. At other times the sensor measures manifold absolute pressure.

The **Exhaust Gas Oxygen Sensor** provides a voltage to the **ECA** for regulating the air/fuel ratio by sensing the oxygen content of the exhaust gases. Oxygen shows a lean exhaust gas mixture while no oxygen shows a rich mixture.

6 AND 8 CYL CFI

Fuel Flow

The 6 and 8 CYL CFI engines use **EEC III Central Fuel Injection (CFI)**. Fuel is injected directly into the engine through the fuel charging assembly (Fuel Injectors #1 and #2). Fuel pressure is built up by the **Electric Fuel Pump**. With the **Ignition Switch** in **START** or **RUN**, the **EEC Power Relay** applies voltage to the circuit. When controlled by the **Electronic Control Assembly**, and with the **Inertia Switch** closed, the **Fuel Pump Relay** operates, applying power to the **Fuel Pump** through the **Inertia Switch**.

The **Idle Speed Motor** (found on 6 cyl CFI engines) controls fuel flow in idle conditions.

When the **Throttle Kicker Solenoid** (found on 8 cyl CFI engines) is grounded by the **ECA**, the engine idle is increased.

The **Canister Purge Solenoid** (also on 8 cyl CFI engines) controls the flow of fuel vapors from the canister to the intake manifold during various engine operating modes.

Thermactor Air

The efficiency of the catalytic converter is dependent upon the temperature and chemical make-up of the exhaust gases. To meet these requirements an air supply system called

Throttle Position Sensor				
Turbo	At upper rear center of engine	115-1		
Non-Turbo.....	Attached to RH side of carburetor	9-1		
Vane Air Flow Meter	Inside front RH fender apron	124-1		
Connector C149	Near battery		BK	1
Connector C162	Upper LH rear side of engine		BK	4
Connector C163	Rear of LH shock tower		BK	4
Connector C166	Rear side of RH valve cover		BK	4
Connector C274	LH cowl below access hole		GY	3
Connector C275	LH side of engine		N	2
Connector C358	Near ignition coil		BR	1
Connector C1984	Near ignition coil.....	20-1	GY	6
Connector C1985	Near ignition coil.....	20-1	GY	1
Ground G101	Lower LH front of engine	124-2		
Ground G116	RH fender apron, by battery	13-1		
Ground G118	At electronic control assembly	123-1		
Ground G119	RH front of engine at air scoop	124-1		
Ground G301	LH side of trunk lid striker	35-2		
Splice S127.....	In 12A581, near T/O to 19D887			
Splice S129.....	In 14405, between T/O to fuel pump relay and T/O to 13B440			
Splice S130.....	In 12A581, near T/O to EGR solenoid			
Splice S131.....	In 12A581, near connector to battery ground terminal			
Splice S132.....	In 12A581, near T/O to EEC power relay			
Splice S149.....	In 12A581, near T/O to EEC power relay			
Splice S505	In 14405, near T/O to inertia switch			

Thermactor Air is provided. Depending on engine conditions sensed by the **ECA**, thermactor air is sent to one of three places.

With the **Thermactor Air Diverter Solenoid** in normal (operated) position, thermactor air flows to the catalytic converter. During engine warmup, the **Thermactor Air Diverter Solenoid** does not operate. Thermactor air is then diverted to the exhaust manifold.

When the **Thermactor Air Bypass Solenoid** is operated, thermactor air is dumped to the atmosphere rather than to the catalytic converter or exhaust manifold.

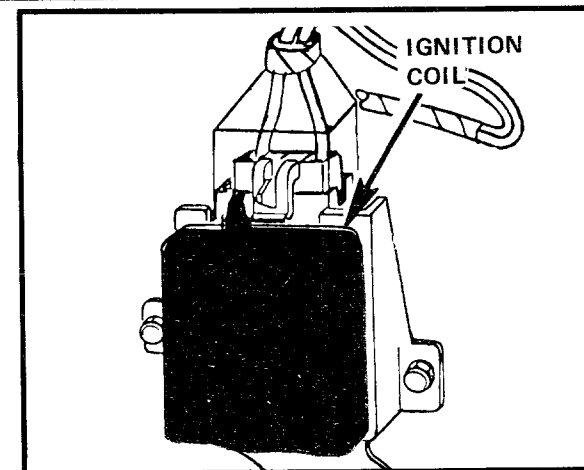


Figure 1 - LH Shock Tower Area

EGR (Exhaust Gas Recirculation)

THE **EGR Vent** and **Control Solenoids** control **EGR** valve movement. The **ECA** receives data from seven sensors. It also checks existing valve position through the **EGR Valve Position Sensor**, and calculates if the present **EGR** flow should be increased, maintained or decreased. The **ECA** then determines which **EGR** solenoids will be operated or not operated to control emissions.

Sensing Devices

Various sensing devices are used to determine engine operating conditions. They provide the **ECA** with throttle, pressure, temperature, and exhaust gas information. The **Throttle Position Sensor** sends one of three signals to the **ECA** to indicate closed, partially open, or wide open throttle.

The **Manifold Charge Temperature Sensor** measures the air temperature in the air cleaner and sends the signal to the **ECA**.

The **Barometric Pressure Sensor** measures atmospheric pressure (changes with altitude) when the Ignition Switch is turned to **START** or when throttle is wide open. At other times the sensor measures manifold absolute pressure.

The **Exhaust Gas Oxygen Sensor** (Heated EGO Sensor - 8 cyl CFI) provides a voltage to the **ECA** for regulating the air/fuel ratio by sensing the oxygen content of the exhaust gases. Oxygen shows a lean exhaust gas mixture while no oxygen shows a rich mixture. The heated EGO sensor provides better emission control during cold weather operation.

The **Knock Sensor** (found on 6 cyl CFI engines) detects engine knock so that timing can be retarded by the **ECA**.

The **ECA** grounds the **Heat Exhaust Control Solenoid** (found on 6 cyl CFI engines) when the engine is cold. The solenoid enables hot exhaust gases to flow around and warm the intake manifold.

The **ECA** ground the **Heat Exhaust Control Solenoid** (found on 6 cyl CFI engines) when the

engine is cold. The solenoid enables hot exhaust gases to flow ground and warm the intake manifold.

EFI TURBO

The 2.3L EFI Turbo engine uses **EEC IV** Electronic Fuel Injection (EFI). Fuel is injected directly into each cylinder through the **Fuel Injectors**. A carburetor is not used. Fuel pressure is built up by the **Electric Fuel Pumps**. With the **Ignition Switch** in **START** or **RUN**, the **EEC Power Relay** applies voltage to the circuit. When controlled by the **Electronic Control Assembly**, and with the **Inertia Switch** closed, the **Fuel Pump Relay** operates, applying power to the **Fuel Pumps** through the **Inertia Switch**.

Current to the **Rear Fuel Pump** passes through a ballast **Resistance Wire**, and this pump, mounted in the fuel tank, pumps fuel at low pressure. Pressure is boosted by the **Front Fuel Pump**.

The **Idle Speed Actuator** controls air flow to increase idle speed on low temperature. It adjusts for load when the A/C and power steering operate.

Exhaust Gas Recirculation (EGR)

The **EGR Control Solenoid** sends vacuum to the ported **EGR** valve, which allows exhaust gases to recirculate. The solenoid operates at a time after the engine starts. With higher coolant temperature at start, the time delay is shorter. It turns off at high temperature, high load (boost) and high engine speed.

Sensing Devices

Various sensing devices are used to determine engine operating conditions. They provide the **ECA** with throttle pressure, temperature, and exhaust gas information. The **Throttle Position Sensor** sends one of three

signals to the **ECA** to indicate closed, partially open, or wide open throttle.

The **Engine Coolant Temperature Sensor** measures engine temperature.

The **Barometric Pressure Sensor** measures atmospheric pressure (changes with altitude).

The **Exhaust Gas Oxygen Sensor** provides a voltage to the **ECA** for regulating the air/fuel ratio by sensing the oxygen content of the exhaust gases. Oxygen shows a lean exhaust gas mixture while no oxygen shows a rich mixture.

The **Vane Air Flow Meter** measures both the temperature and flow rate of inlet air. The **ECA** computer uses these signals to calculate mass air flow.

The **Knock Sensor** detects engine knock so that timing can be changed.

TROUBLESHOOTING HINTS

If the **EEC** engine operates with 10° BTDC constant spark timing, and the **EGR** system does not operate, there is a problem in either the calibration assembly or the **ECA** (**LOS** mode).

The constant 10° advance is a fail-safe mode which permits the car to be driven in for service when the electronics are not operating correctly. When this happens, it is necessary to go into the full electronics diagnosis routine.

Read the Shop Manual and special service bulletins for complete **EEC** test procedures using special Rotunda test equipment.

NOTE

The Voltage Regulator with **BLACK** connector is used with Alternator Warning Indicator;

GRAY connector with Ammeter;

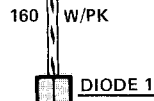
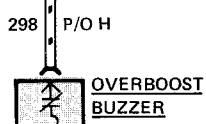
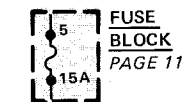
CLEAR connector with either.

NOTE

If engine does not operate after a collision, it is possible the **Inertia Switch** has opened. Switch can be reset by pushing down on plunger of switch.

118 EFI TURBO INDICATOR

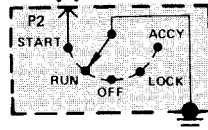
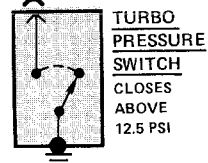
HOT IN RUN



160 W/PK

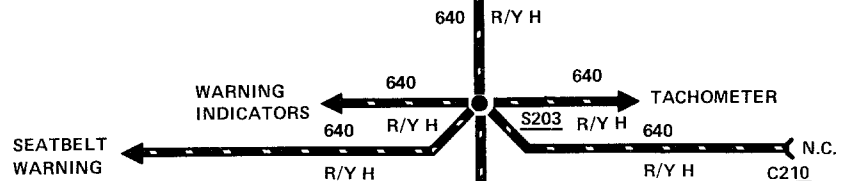
C363

160 W/PK



IGNITION SWITCH
SEE PAGE 80
FOR TERMINALS

HOT IN RUN OR START



NOTE: LATE PRODUCTION VEHICLES HAVE A "LOW OIL WARNING LAMP" INSTEAD OF THE OVER-BOOST WARNING INDICATOR



41 BK/LB H

EARLY PRODUCTION

WARNING INDICATORS/
SEAT BELT WARNING

41 BK/LB H

LATER PRODUCTION



41 BK/LB H

41 BK/LB H

HOW THE CIRCUIT WORKS

The Turbo Boost System is powered by engine exhaust gases. The gases rotate the turbine, which rotates the compressor. The compressor increases pressure in the engine intake manifold. As engine speed increases, the turbine and compressor rotate faster and the intake manifold pressure increases.

When the manifold pressure exceeds about 12.5 psi, the engine is overboosted. The HI Turbo Pressure Switch closes. The Overboost Buzzer sounds, and the Overboost Warning Indicator goes on (for vehicles with Overboost Warning Indicator).

When the Ignition Switch is in the START position, ground is connected to the Overboost Buzzer and the Overboost Warning Indicator to test these circuits.

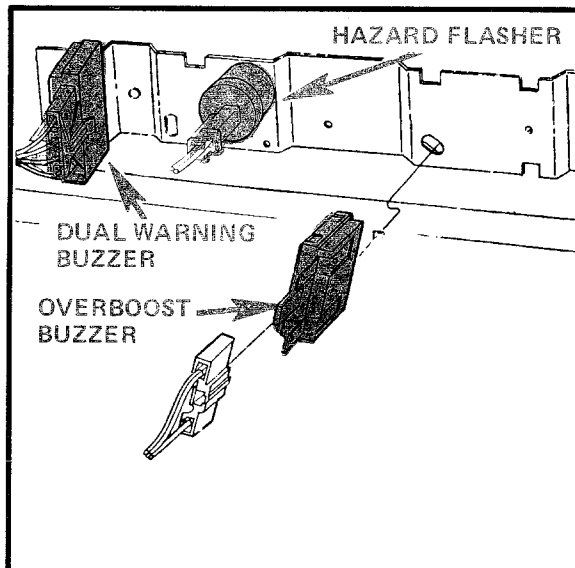


Figure 1 - Above Glove Box

COMPONENT LOCATION

		Page- Figure	Color	Terminals
Diode 1	Near takeout to overboost buzzer, in harness			
Diode 2	Near radio receiver, in harness			
Ignition Switch	Lower RH side of steering column	53-1		
Overboost Buzzer	On bracket above glove box	119-1		
Overboost Warning Indicator	At LH side of I/P	119-1		
Turbo Pressure Switch	Rear face of RH shock tower	123-2		
Connector C350	Behind center of I/P		BK	8
Connector C363	Behind RH corner of I/P		GR	8
Splice S203	In 14401, near T/O to horn switch			

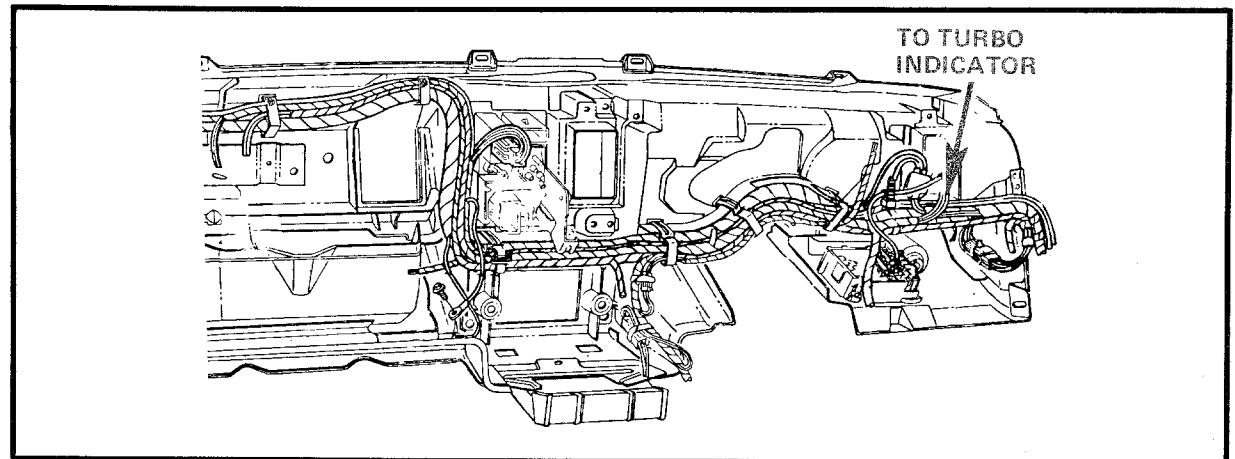
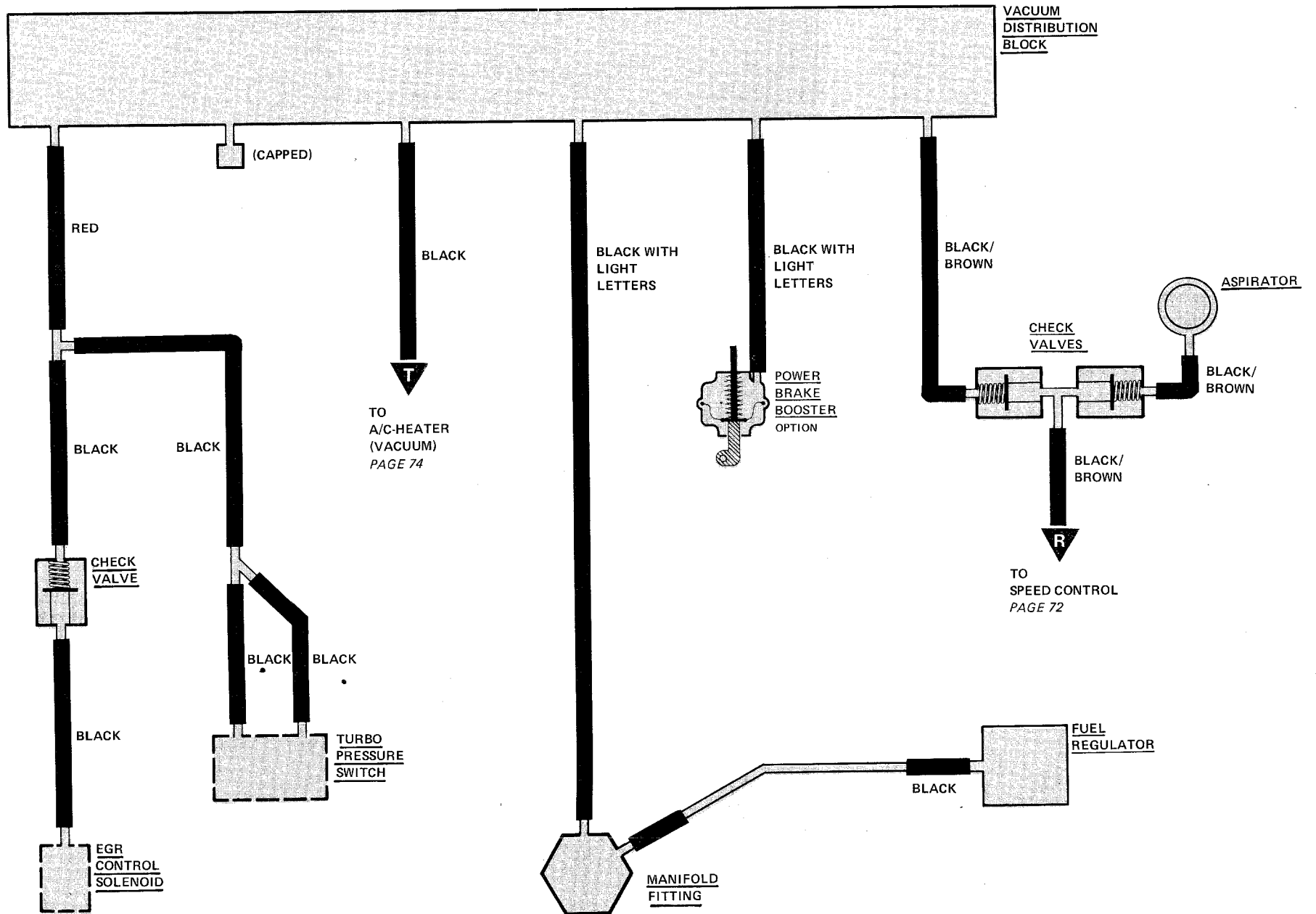


Figure 2 - Rear View Of Instrument Panel

NOTE: Late production vehicles do not have an overboost warning indicator.

4 CYL TURBO



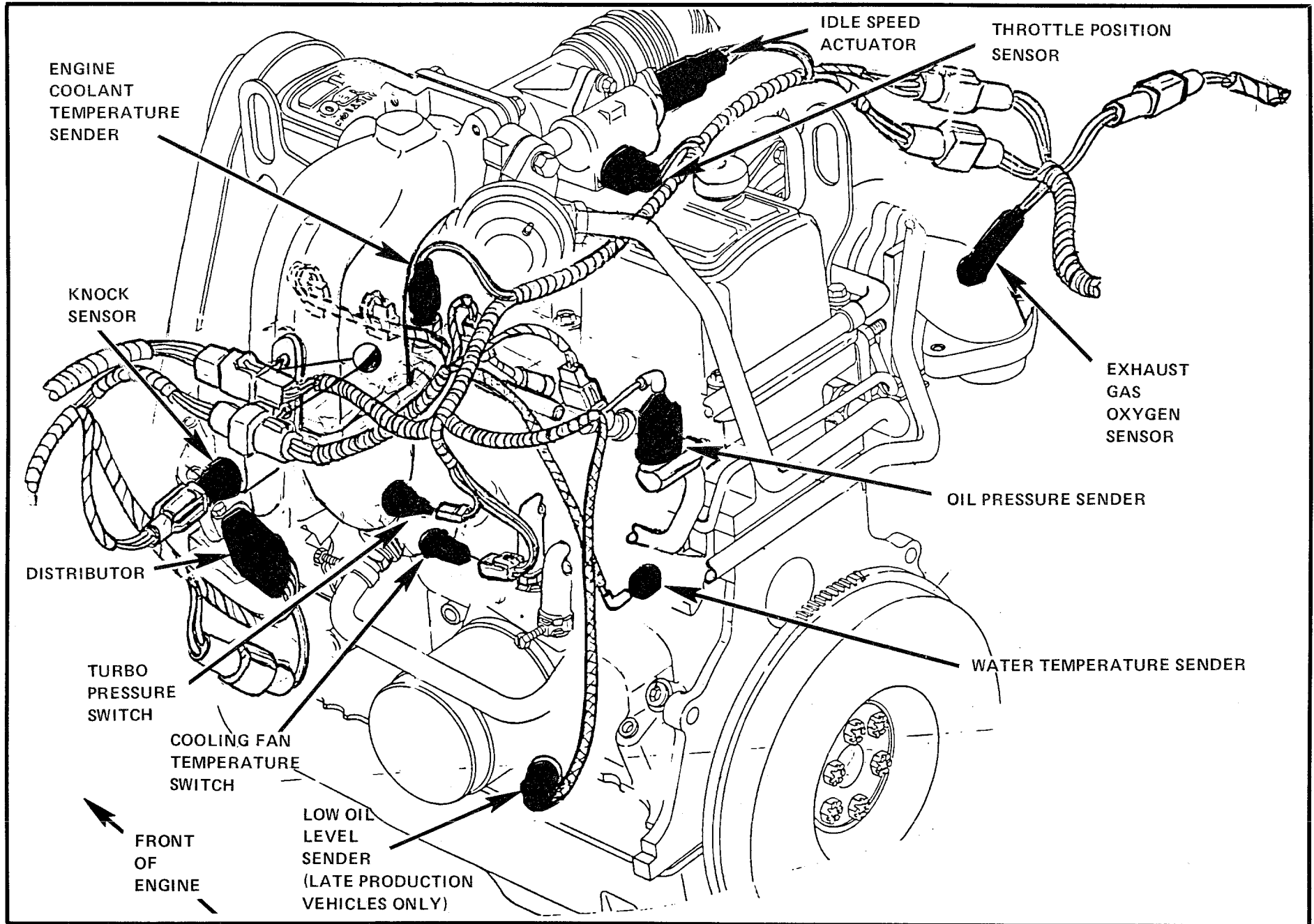


Figure 1 - LH Side Of 2.3L EFI Turbo Engine

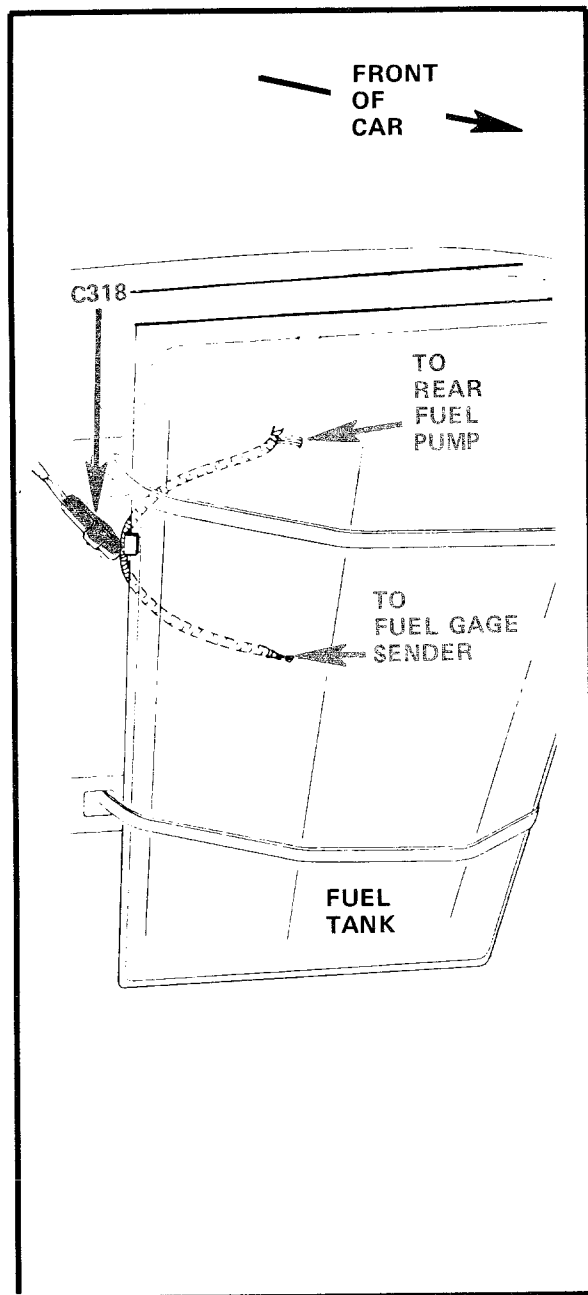


Figure 1 - Under Rear Of Car

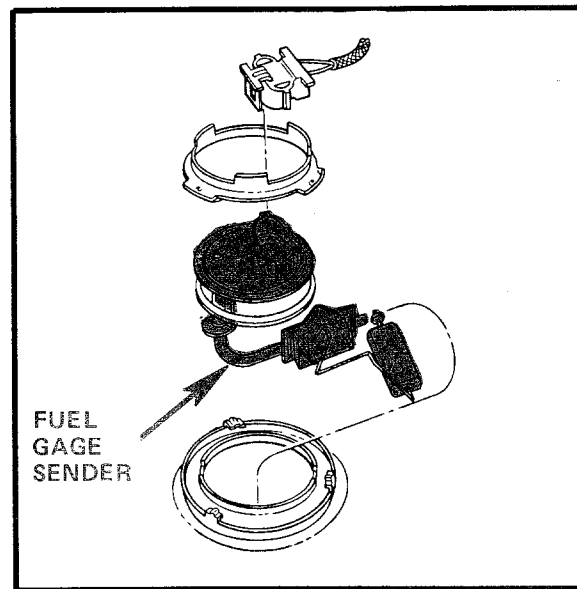


Figure 2 - Center Of Fuel Tank

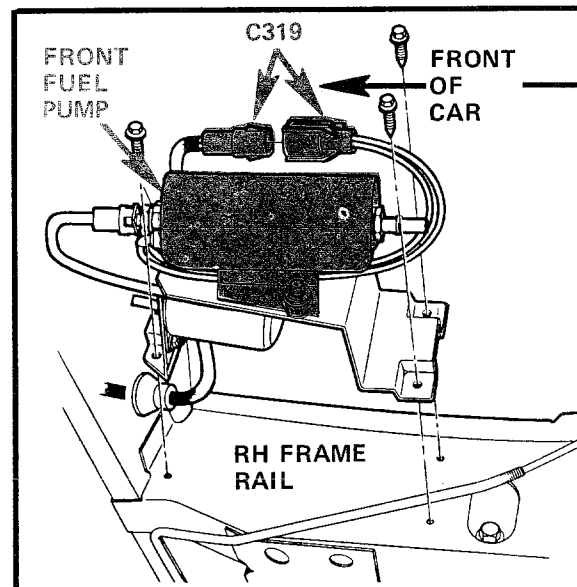


Figure 3 - Under RH Rear Seat

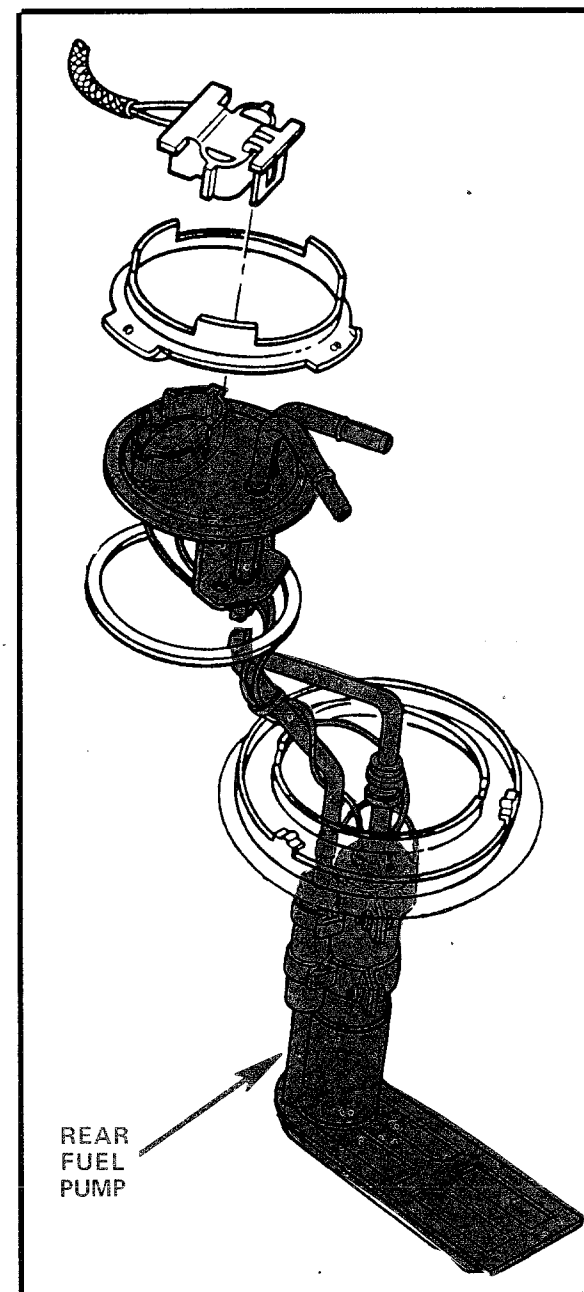


Figure 4 - RH Side Of Fuel Tank

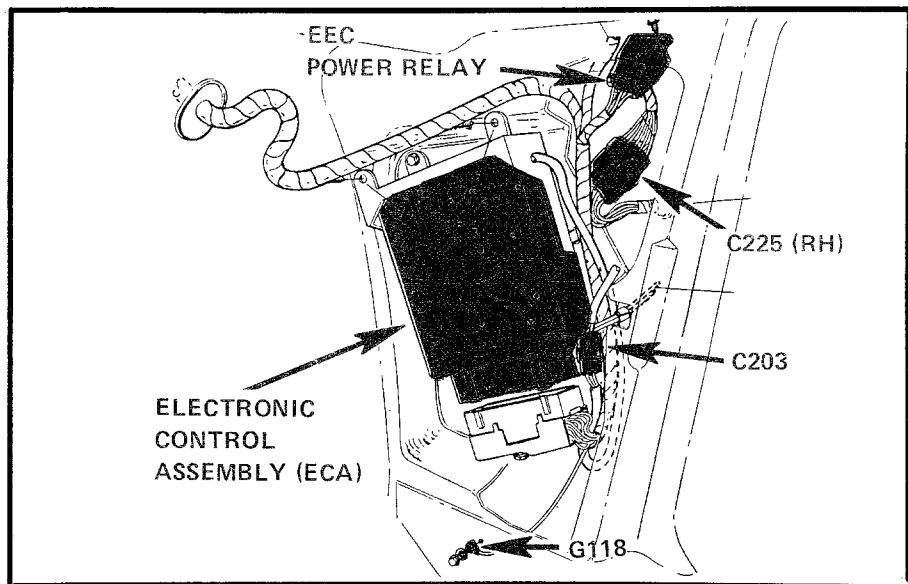


Figure 1 - Under RH Cowf

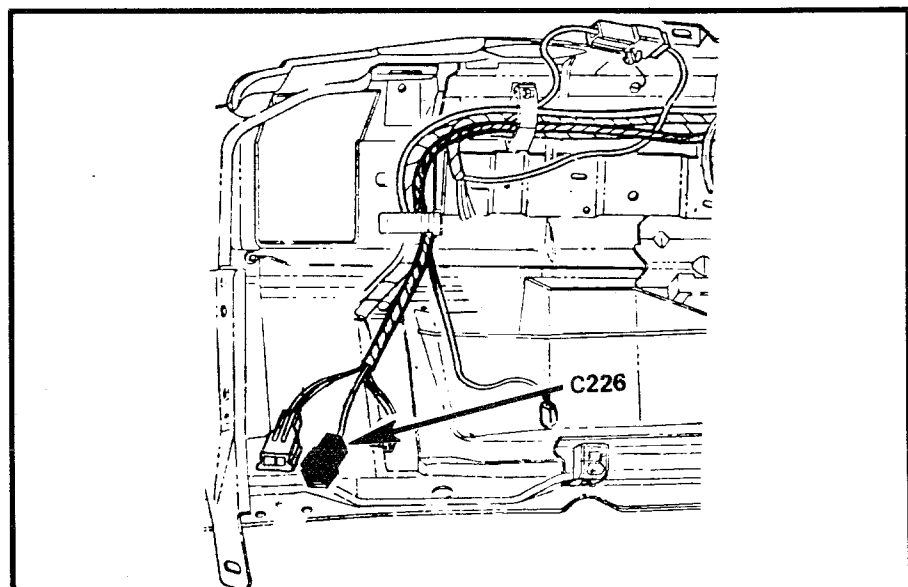


Figure 3 - Behind RH Side Of I/P

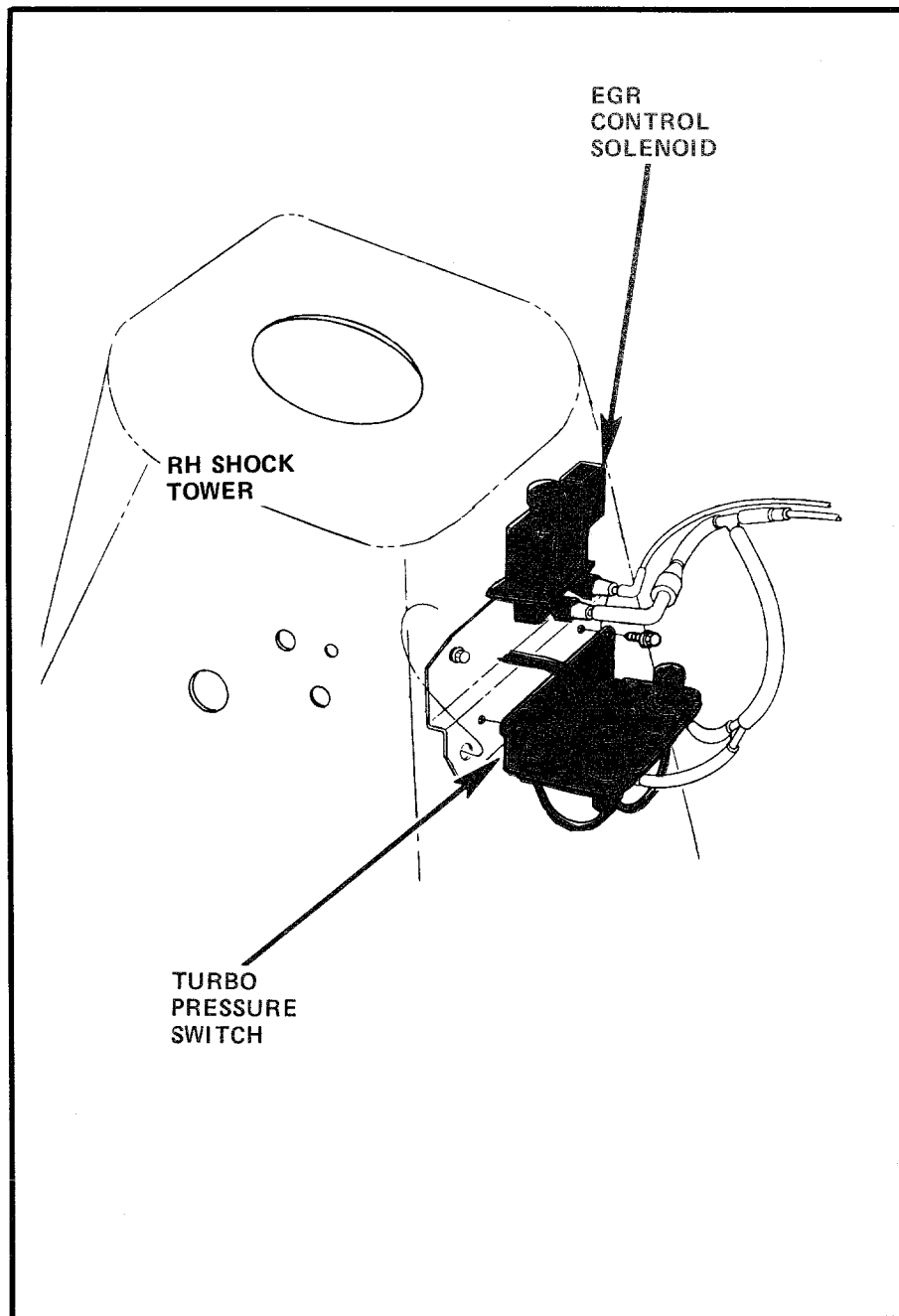


Figure 2 - RH Rear Of Engine Compartment

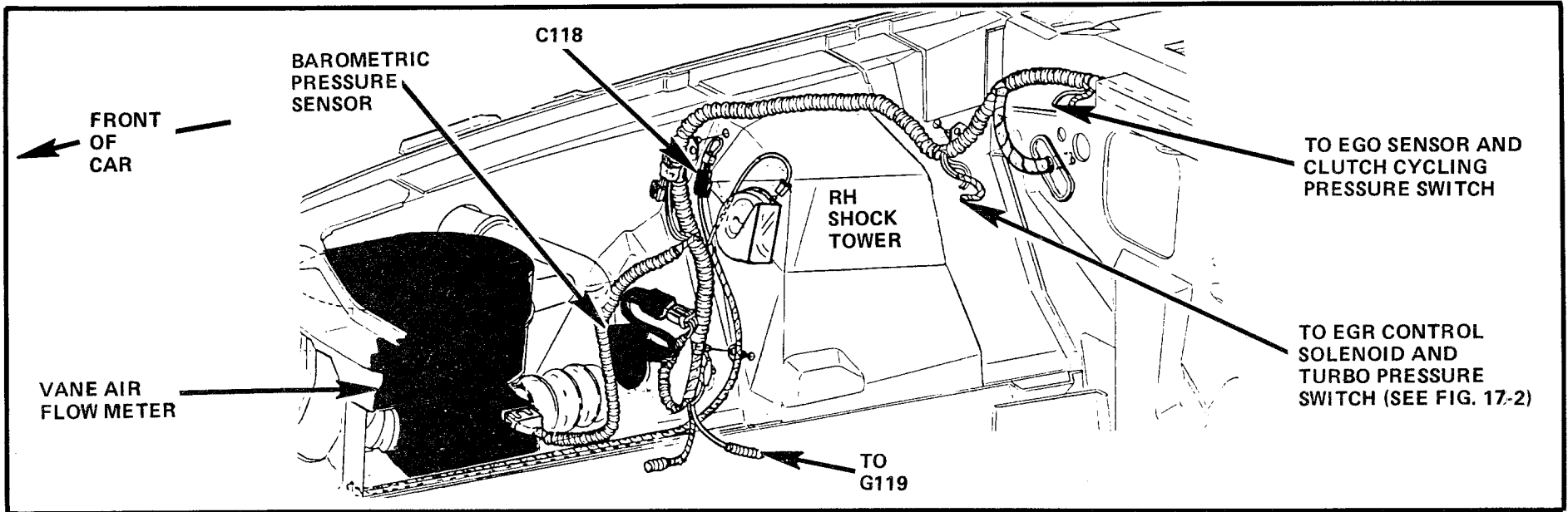


Figure 1 - RH Fender Apron

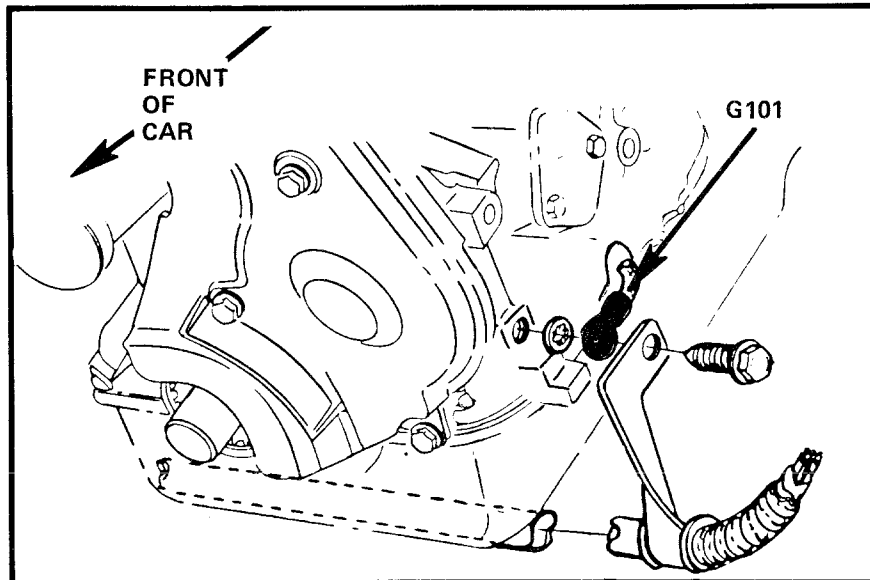


Figure 2 - Lower LH Front Of Engine

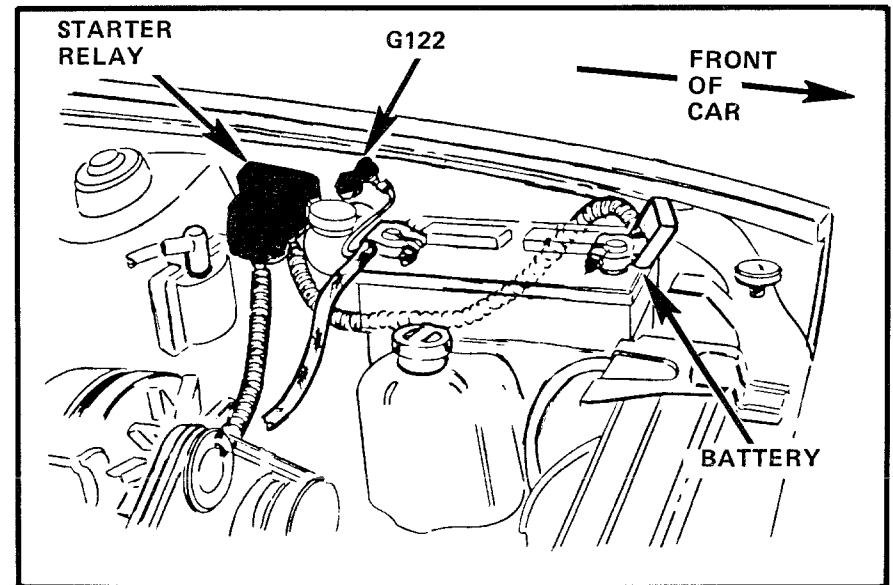
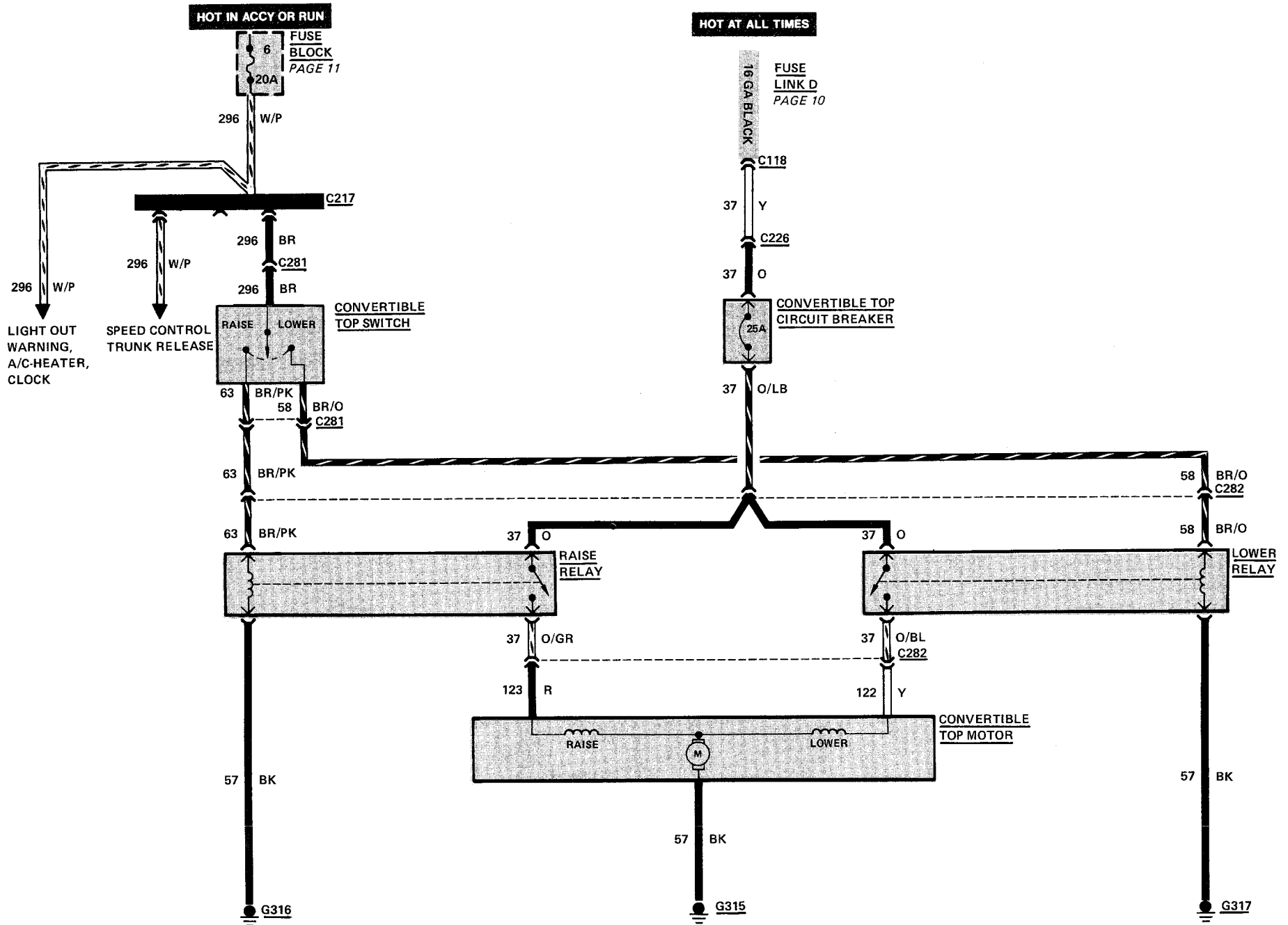


Figure 3 - LH Fender Apron



HOW THE CIRCUIT WORKS

With the **Ignition Switch** in ACCY or RUN, voltage is available through **Fuse 6** to the Convertible Top Switch. When the switch is turned to RAISE, power is applied to the coil of the **Fuse Link D** is then applied through the relay to the **Convertible Top Motor**.

When the switch is turned to LOWER, power is applied to the coil of the **Lower Relay** and the relay operates. Power from **Fuse Link D** is then applied through the relay to the **Convertible Top Motor**.

TROUBLESHOOTING HINTS

CONVERTIBLE TOP DOESN'T WORK IN EITHER DIRECTION

- Check **Fuse 6**, **Fuse Link D**, and the **Convertible Top Circuit Breaker**.
- Check **G316** and **G315**.
- Check continuity of **Convertible Top Motor**.

CONVERTIBLE TOP WORKS IN ONE DIRECTION ONLY

- Check operation of relays.
- Check **Convertible Top Switch**.
- Check continuity of wires.

COMPONENT LOCATION

		Page- Figure	Color	Terminals
Convertible Top				
Circuit Breaker	.....	Behind lower center of I/P	.....	126-1
Convertible Top Motor	....	Lower left rear quarter		
Convertible Top Switch	...	Lower center of I/P	.....	126-1
Fuse Link D	.....	RH front fender	.....	12-1
Lower Relay	.....	Lower left rear quarter		
Raise Relay	.....	Lower left rear quarter		
Connector C118	.....	LH fender apron, below starter relay	.....	12-1 GY 1
Connector C217	.....	Behind LH side of I/P, above fuse block	.....	126-1 Y 3
Connector C226	.....	Under RH side of I/P	.....	126-1 BL 1
Connector C281	.....	Behind lower center of I/P	.....	126-1 GY 3
Connector C282	.....	LH side of cowl	.....	GY 3
Ground G315	.....	At convertible top motor		
Ground G316	.....	Center rear body cross member		

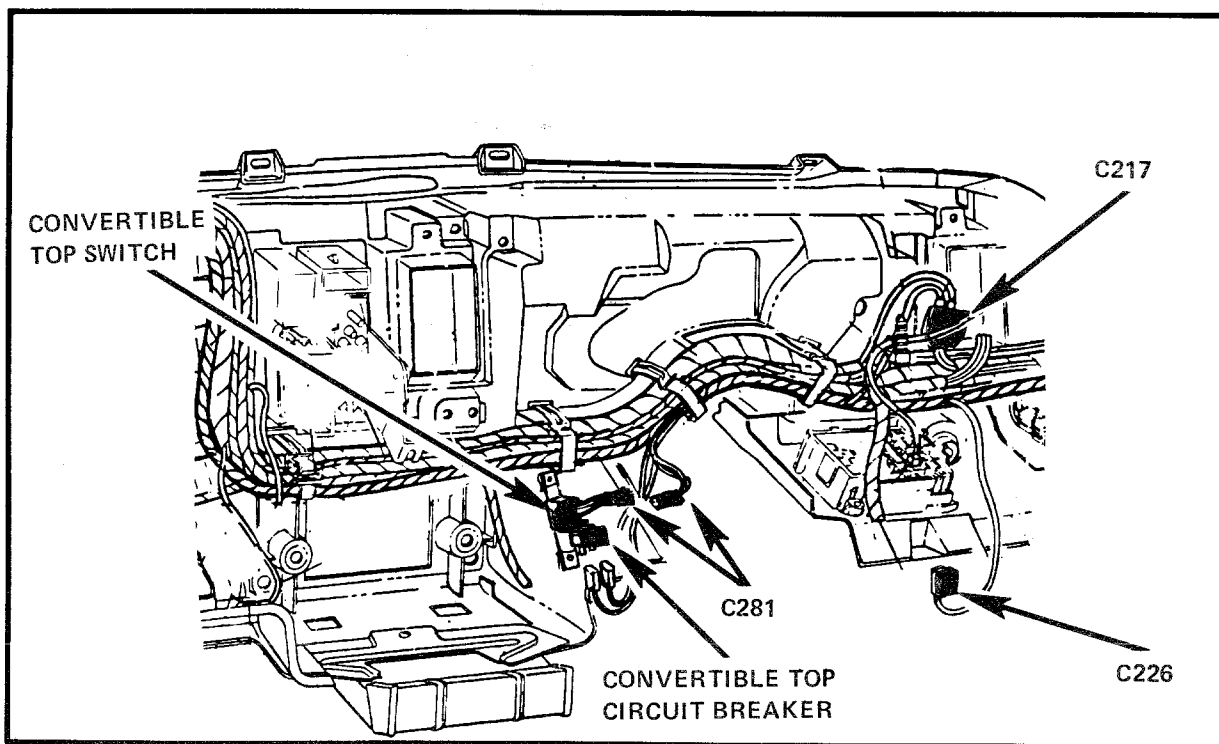
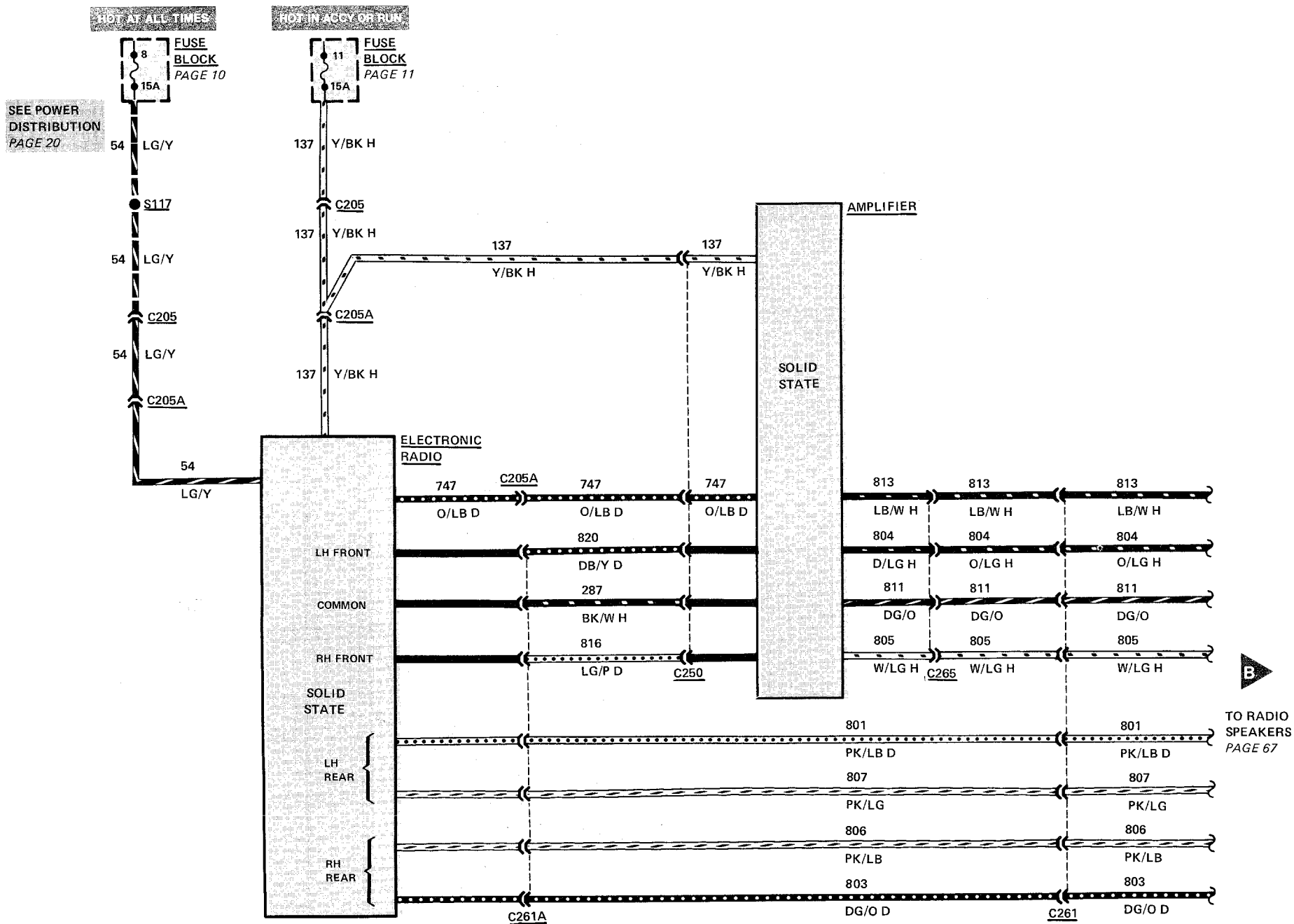


Figure 1 - Behind LH Side Of I/P



SEE POWER DISTRIBUTION PAGE 20

FUSE BLOCK PAGE 10

FUSE BLOCK PAGE 11

AMPLIFIER

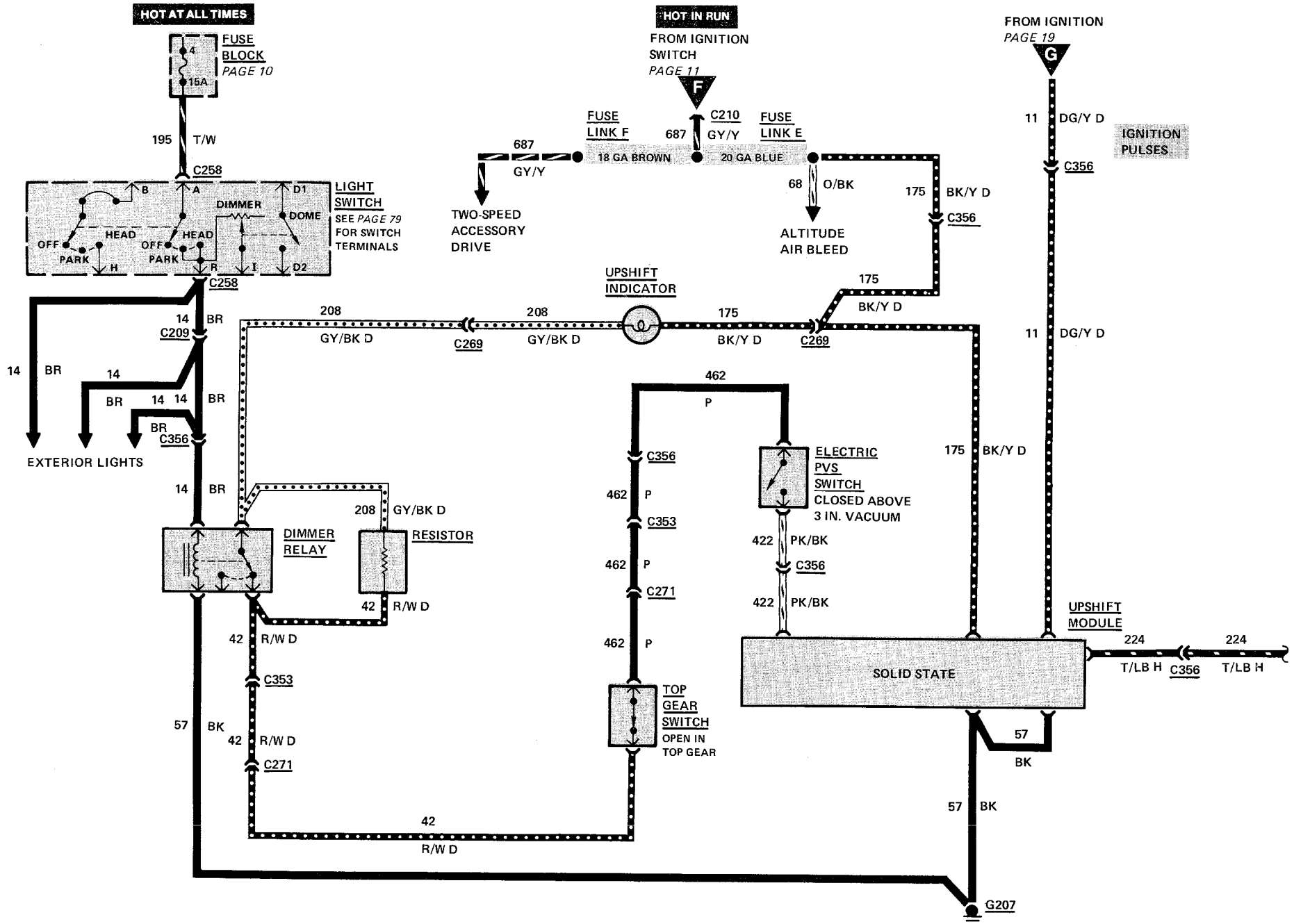
SOLID STATE

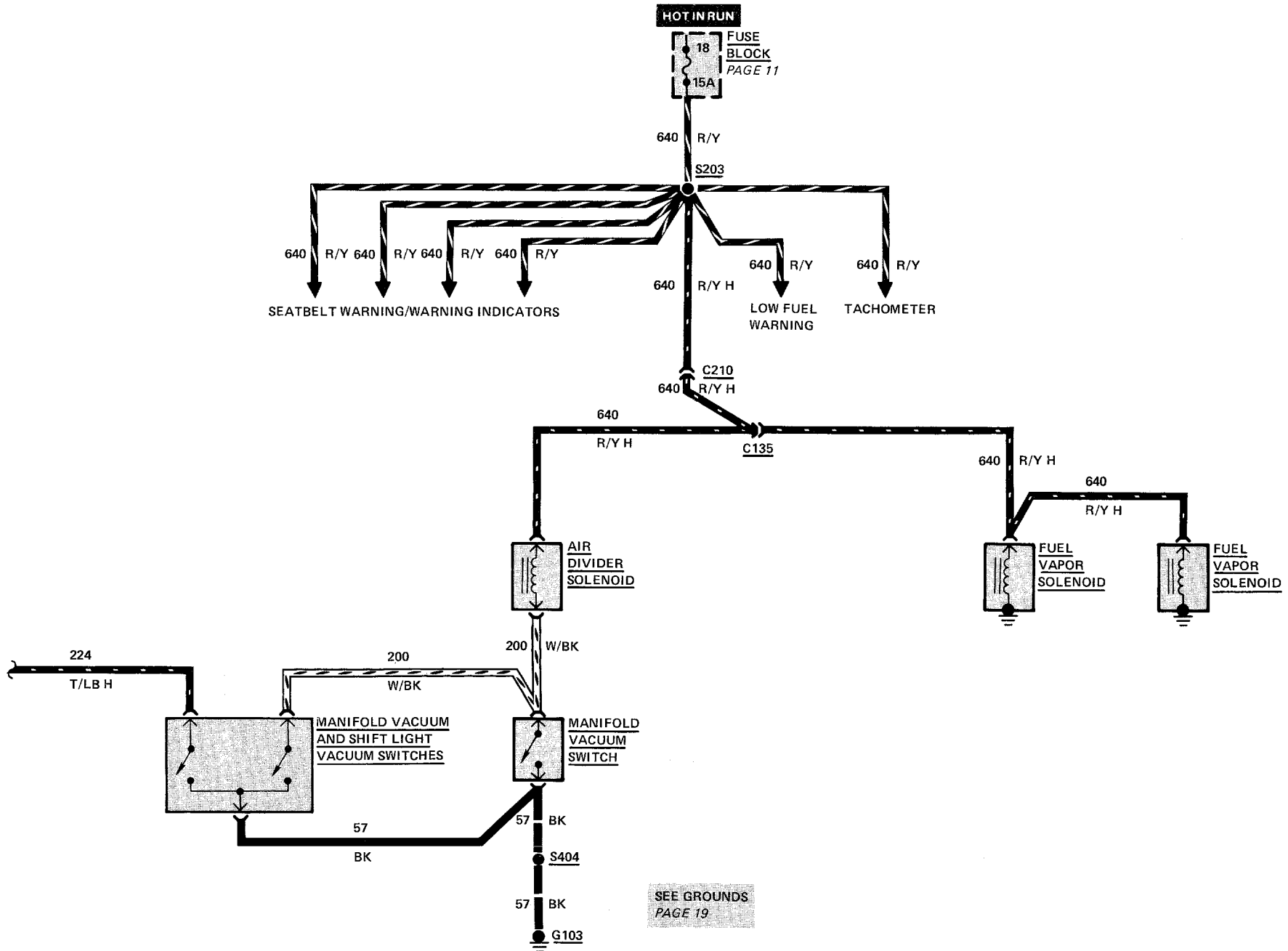
ELECTRONIC RADIO

B

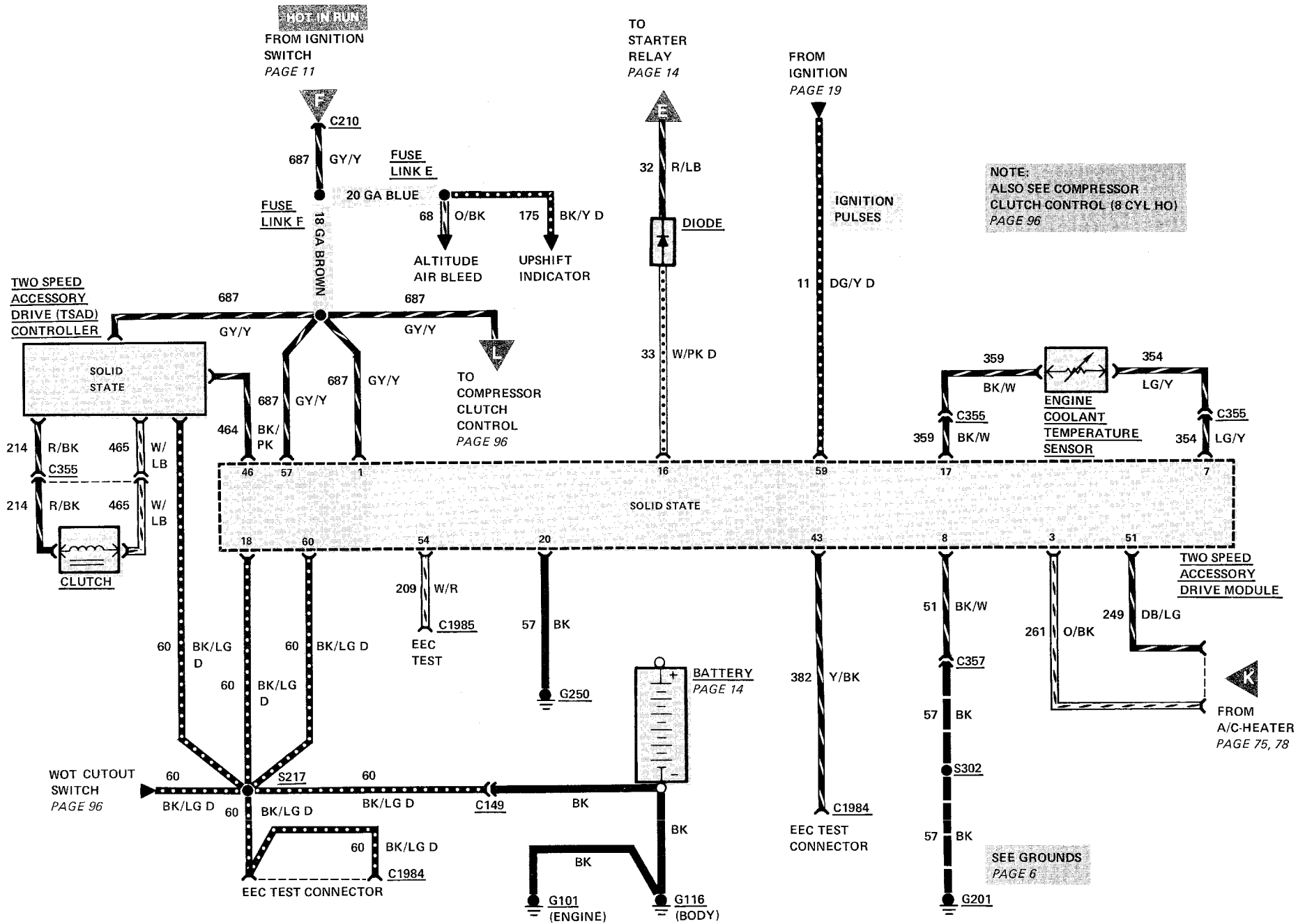
TO RADIO SPEAKERS PAGE 67

128 UPSHIFT INDICATOR (8 CYL HO)





130 TWO-SPEED ACCESSORY DRIVE (8 CYL HO)



Engine accessories are powered by the engine through a belt. These accessories include the fan, A/C compressor, alternator, power steering pump, and water pump.

When engine speed is low, the **clutch** is energized to power the accessories at full speed.

When engine speed is high, the accessories do not require so much power. Above 850 to 950 rpm, the clutch is de-energized to operate the accessory belt at half-speed. This occurs only after the engine has been warmed up for at least 3 minutes.

When the **clutch switch** is closed (see Start circuit) a ground path is completed to pin 16. This means that the throttle can be run up without excess switching when the car is out of gear.

(Refer to Compressor Clutch Control - 8 cyl HO)

Pins 3 and 51 sense when the blower is operating at high speed. When the blower is on high speed, the accessory drive operates at full speed.

COMPONENT LOCATION

		Page- Figure	Color	Terminals
Engine Coolant Temperature Sensor				
Fuse Link E, F	LH fender apron			
TSAD Controller	LH side of I/P			
TSAD Module	Under RH side of I/P			
Connector C135	Center of dash panel		GY	8
Connector C149	Near battery		BK	1
Connector C210	Under LH side of I/P on shake brace		GY	12
Connector C355	LH fender		BK	4
Connector C357	Behind RH corner of I/P		GR	8
Connector C1984	LH fender apron		GY	6
Connector C1985	LH fender apron		GY	1
Ground G101	Lower LH front of engine			
Ground G116	RH fender apron, by battery	13-1		
Ground G201	Behind LH side of glove box	45-1		
Ground G250	Near TSAD module			
Splice S217	In 14290, near connector to battery ground terminal			
Splice S302	In 14401, near T/O to radio			

132 ALTITUDE AIR BLEED

