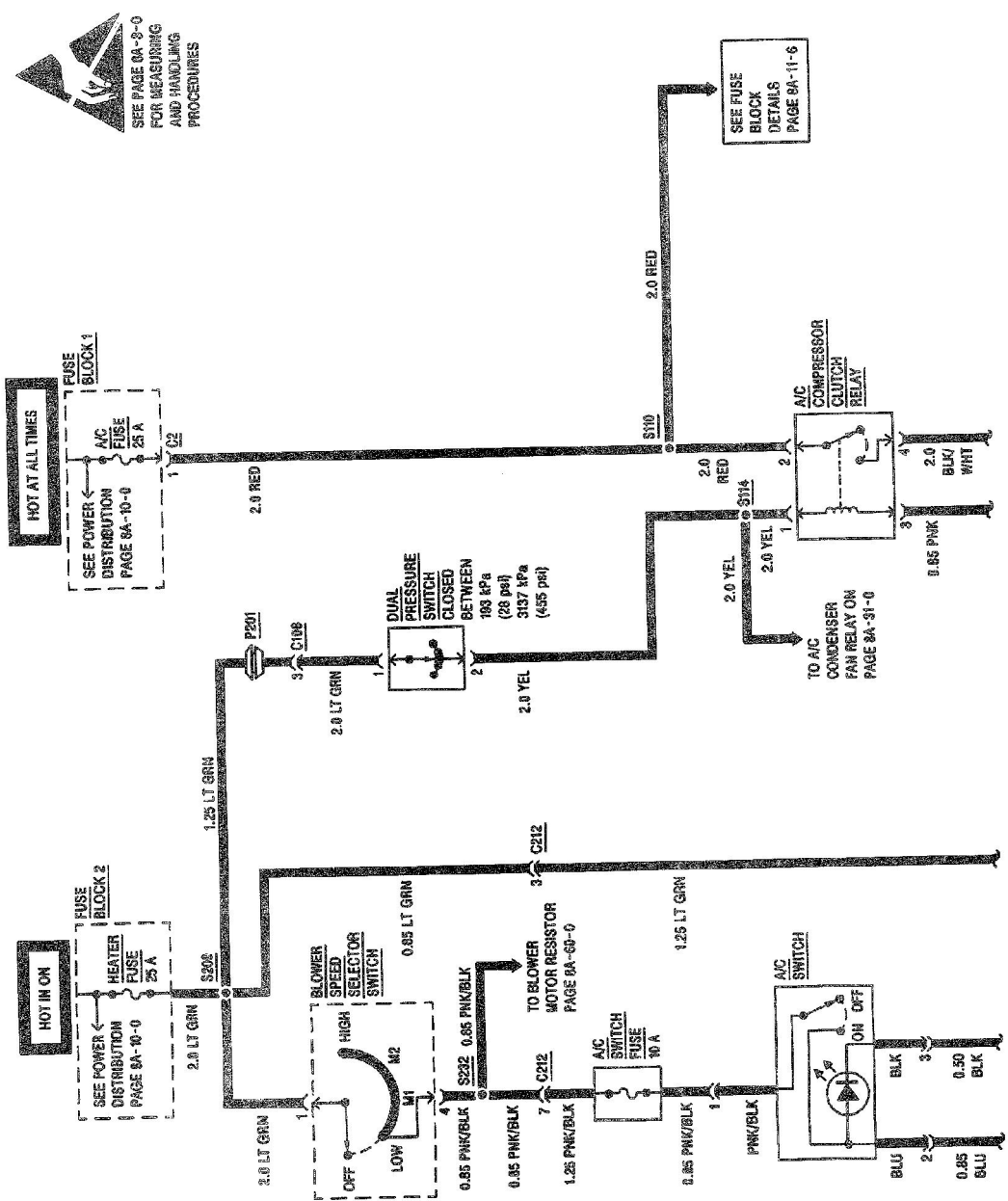
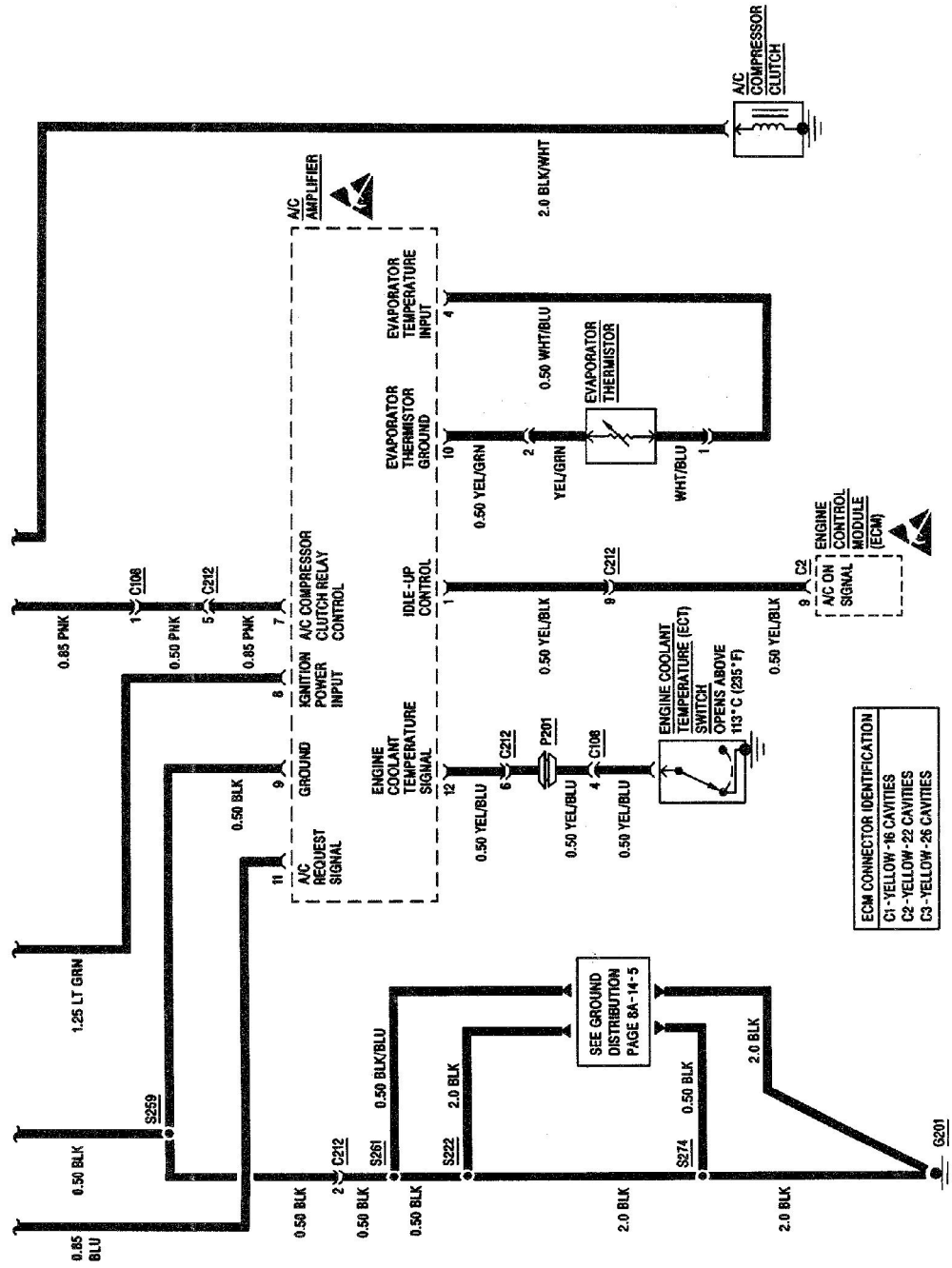


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 HVAC: COMPRESSOR CONTROL



SEE PAGE 0A-8-0
 FOR MEASURING
 AND HANDLING
 PROCEDURES

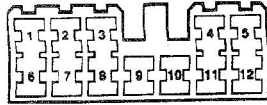
SEE FUSE
 BLOCK
 DETAILS
 PAGE 8A-11-6



8A - 64 - 2 ELECTRICAL DIAGNOSIS

HVAC: COMPRESSOR CONTROL

A/C AMPLIFIER CONNECTOR



NATURAL

EJS008864

WIRING DETAIL LEGEND

CAVITY	WIRE COLOR	CIRCUIT
1	YEL/BLK	Idle-Up Control
2	BLK/YEL	Ignition Switch - Crank Signal
3	—	NOT USED
4	WHT/ BLU	Evaporator Temperature Input
5	—	NOT USED
6	BLU/RED	A/C Condensor Fan Relay Control
7	PNK	A/C Compressor Clutch Relay Control
8	LT GRN	Ignition Power Input
9	BLK	Ground
10	YEL/ GRN	Evaporator Thermister Ground
11	BLU	A/C Request Signal
12	YEL/BLU	ECT Signal

COMPONENT	LOCATION	201-PG	FIG.	CONN
A/C Amplifier.....	Behind RH I/P on Evaporator.....			64-02
A/C Compressor Clutch.....	LH Front Engine Compartment, attached to A/C Compressor.....	03	A	
A/C Compressor Clutch Relay.....	RH Engine Compartment near Fuse Block 1.....	03	A	202-15A1
A/C Switch.....	Center of I/P above Radio			
A/C Switch Fuse.....	RH I/P, behind I/P Compartment			
Blower Speed Selector Switch..	Center of I/P above Radio.....			202-15A2
Dual Pressure Switch.....	RH Front Engine Compartment, behind Radiator	03	A	
Engine Control Module (ECM).....	Under LH I/P, left of Steering Column			
C2 (22 Cavities).....	Main Harness to ECM, behind I/P left of Steering Column..	06	A	20-11
Engine Coolant Temperature (ECT) Switch.....	RH side of Engine in Thermostat Housing.....	05	A	
Evaporator Thermistor	Behind RH I/P in Evaporator Housing			
Fuse Block 1	RH Engine Compartment, front of Battery.....	01	A	
C2 (1 Cavity)	Main Harness to Fuse Block 1, below Fuse Block 1.....	01	A	
Fuse Block 2	Under LH I/P.....	06	A	
C108 (4 Cavities).....	Main Harness to A/C Sub-Harness, behind RH Headlamp			202-16A1
C212 (10 Cavities).....	Main Harness to A/C Amplifier Jumper Harness, RH I/P, behind I/P Compartment			202-10A1
G201.....	Behind RH I/P, near Blower Assembly.....	06	A	
P201	RH Rear Engine Compartment on Bulkhead, near Battery	01	A	
S110.....	Outer A/C Harness, RH Engine Compartment, near Strut Tower			
S114.....	Outer A/C Harness, RH Engine Compartment on top of Strut Tower			
S209	Main Harness, center of I/P near Blower Speed Selector Switch			
S222	Main Harness, center of I/P, near Blower Speed Selector Switch			
S232	Main Harness, RH side of I/P, near Blower Speed Selector Switch			
S259	A/C Jumper Harness, behind RH I/P near A/C Amplifier			
S261	Main Harness, near C212 connector breakout			
S274	Main Harness, near Engine Control Module (ECM)			

8A - 64 - 4 ELECTRICAL DIAGNOSIS

HVAC: COMPRESSOR CONTROL

TROUBLESHOOTING HINTS

1. Check A/C FUSE, A/C SWITCH FUSE and HEATER FUSE with a fuse tester.
2. Be sure A/C system is properly charged. Refer to SECTION 1B.

3. Refer to SECTION 8A-60 for Blower Motor and Heater System diagnosis.
4. Refer to SECTION 8A-31 for A/C Condenser Fan diagnosis.
5. Check that ground G201 is clean and tight.

SYSTEM DIAGNOSIS

TEST	RESULT	ACTION
1. Start engine, Press A/C SWITCH to "ON" and move BLOWER SPEED SELECTOR SWITCH to any position except "OFF."	A/C COMPRESSOR CLUTCH engages and BLOWER MOTOR operates at selected speed.	All systems in this Section are functioning normally.
	A/C COMPRESSOR CLUTCH engages, but BLOWER MOTOR does not operate.	Refer to SECTION 8A-60 for Blower Motor and Heater System Diagnosis.
	BLOWER MOTOR operates, but A/C COMPRESSOR CLUTCH does not engage.	GO to step 2.
	A/C COMPRESSOR CLUTCH remains engaged with A/C SWITCH OFF.	GO to step 21.
2. Turn IGNITION SWITCH to "LOCK," then turn it to "ON." Backprobe A/C COMPRESSOR CLUTCH connector with a test lamp from connector cavity to chassis ground.	Test lamp lights.	Replace A/C COMPRESSOR CLUTCH.
	Test lamp does not light.	GO to step 3.
3. Backprobe A/C COMPRESSOR CLUTCH RELAY connector with a test lamp from cavity 4 to chassis ground.	Test lamp lights.	Repair open in BLK/WHT wire between A/C COMPRESSOR CLUTCH RELAY and A/C COMPRESSOR CLUTCH.
	Test lamp does not light.	GO to step 4.
4. Backprobe A/C COMPRESSOR CLUTCH RELAY connector with a test lamp from cavity 2 to chassis ground.	Test lamp does not light.	Repair open in RED wire between A/C COMPRESSOR CLUTCH RELAY and FUSE BLOCK 1.
	Test lamp lights.	GO to step 5.
5. Backprobe DUAL PRESSURE SWITCH connector with a test lamp from cavity 1 to chassis ground.	Test lamp does not light.	Repair open in LT GRN wire between DUAL PRESSURE SWITCH and FUSE BLOCK 2.
	Test lamp lights.	GO to step 6.
6. Backprobe DUAL PRESSURE SWITCH connector with a test lamp from cavity 2 to chassis ground.	Test lamp does not light.	Replace DUAL PRESSURE SWITCH.
	Test lamp lights.	GO to step 7.
7. Backprobe A/C COMPRESSOR CLUTCH RELAY connector with a test lamp from cavity 1 to chassis ground.	Test lamp does not light.	Repair open in YEL wire between DUAL PRESSURE SWITCH and A/C COMPRESSOR CLUTCH RELAY.
	Test lamp lights.	GO to step 8.
8. Disconnect A/C COMPRESSOR CLUTCH RELAY connector. Connect a test lamp from connector cavity 3 to B+.	Test lamp lights.	Replace A/C COMPRESSOR CLUTCH RELAY.
	Test lamp does not light.	GO to step 9.

SYSTEM DIAGNOSIS

TEST	RESULT	ACTION
9. Disconnect A/C AMPLIFIER connector. Connect a digital multimeter from A/C COMPRESSOR CLUTCH RELAY connector cavity 3 to A/C AMPLIFIER connector cavity 7. Measure resistance.	More than 0.5 ohms.	Repair open in PNK wire between A/C COMPRESSOR CLUTCH RELAY and A/C AMPLIFIER.
	Less than 0.5 ohms.	GO to step 10.
10. Connect a digital multimeter from A/C AMPLIFIER connector cavity 9 to chassis ground.	More than 3.0 ohms.	Repair open in BLK wire between G201 and A/C AMPLIFIER.
	Less than 3.0 ohms.	GO to step 11.
11. Backprobe BLOWER SPEED SELECTOR SWITCH connector with a test lamp from cavity 1 to chassis ground.	Test lamp does not light.	Repair open in LT GRN wire between BLOWER SPEED SELECTOR SWITCH and S209.
	Test lamp lights.	GO to step 12.
12. Backprobe BLOWER SPEED SELECTOR SWITCH connector with a test lamp from cavity 4 to chassis ground.	Test lamp does not light.	Replace BLOWER SPEED SELECTOR SWITCH.
	Test lamp lights.	GO to step 13.
13. Backprobe A/C SWITCH connector with a test lamp from cavity 1 to chassis ground.	Test lamp does not light.	Repair open in PNK/BLK wire between BLOWER SPEED SELECTOR SWITCH and A/C SWITCH.
	Test lamp lights.	GO to step 14.
14. Backprobe A/C SWITCH connector with a test lamp from cavity 2 to chassis ground.	Test lamp does not light.	Replace A/C SWITCH.
	Test lamp lights.	GO to step 15.
15. Connect a test lamp from A/C AMPLIFIER connector cavity 11 to chassis ground.	Test lamp does not light.	Repair open in BLU wire between A/C AMPLIFIER and A/C SWITCH.
	Test lamp lights.	GO to step 16.
16. Connect a digital multimeter from A/C AMPLIFIER connector cavity 12 to chassis ground. Measure resistance.	More than 5.0 ohms.	GO to step 17.
	Less than 5.0 ohms.	GO to step 18.
17. Backprobe ENGINE COOLANT TEMPERATURE (ECT) SWITCH connector with a digital multimeter from connector cavity to ground. Measure resistance.	More than 5.0 ohms.	Replace ECT SWITCH.
	Less than 5.0 ohms.	Repair open in YEL/BLU wire between ECT SWITCH and A/C AMPLIFIER.
18. Connect a digital multimeter from A/C AMPLIFIER connector cavity 10 to cavity 4. Measure resistance.	Less than 2K ohms.	Replace A/C AMPLIFIER.
	More than 2K ohms.	GO to step 19.
19. Disconnect EVAPORATOR THERMISTOR connector. Connect a digital multimeter from EVAPORATOR THERMISTOR connector cavity 2 to A/C AMPLIFIER connector cavity 10. Measure resistance.	More than 5.0 ohms.	Repair open in YEL/GRN wire between A/C AMPLIFIER and EVAPORATOR THERMISTOR.
	Less than 5.0 ohms.	GO to step 20.
20. Connect a digital multimeter from A/C AMPLIFIER connector cavity 4 to EVAPORATOR THERMISTOR connector cavity 1. Measure resistance.	More than 5.0 ohms.	Repair open in WHT/BLU wire between A/C AMPLIFIER and EVAPORATOR THERMISTOR.
	Less than 5.0 ohms.	Replace EVAPORATOR THERMISTOR.

8A - 64 - 6 ELECTRICAL DIAGNOSIS

HVAC: COMPRESSOR CONTROL

SYSTEM DIAGNOSIS

TEST	RESULT	ACTION
21. Disconnect A/C AMPLIFIER connector.	A/C COMPRESSOR CLUTCH is still engaged.	Check for a short to ground in PNK wire between A/C COMPRESSOR CLUTCH RELAY and A/C COMPRESSOR CLUTCH. Check for a short to voltage in BLK/WHT wire between A/C COMPRESSOR CLUTCH RELAY and A/C COMPRESSOR CLUTCH. If both are OK, replace A/C COMPRESSOR CLUTCH RELAY.
	A/C COMPRESSOR CLUTCH is disengaged.	GO to step 22.
22. Make sure A/C SWITCH is "OFF." Connect a test lamp from A/C AMPLIFIER connector cavity 11 to chassis ground.	Test lamp does not light.	Replace A/C AMPLIFIER.
	Test lamp lights.	Check for a short to voltage in BLU wire between A/C SWITCH and A/C AMPLIFIER. If OK, replace A/C SWITCH.

COMPONENT REPLACEMENT INFORMATION

For component replacement procedures, refer to the section listed below.

A/C Amplifier	Section 1B
A/C Compressor Clutch	Section 1D
A/C Compressor Clutch Relay	Section 1B
A/C Switch	Section 1B
Blower Speed Selector Switch	Section 1A
Dual Pressure Switch	Section 1B
Engine Coolant Temperature (ECT) Switch	Section 1B
Evaporator Thermistor	Section 1B

CIRCUIT OPERATION

The A/C AMPLIFIER is powered by voltage from the HEATER Fuse and permanently grounded at G201.

With the IGNITION SWITCH, BLOWER SPEED SELECTOR SWITCH and A/C SWITCH in the "ON" position, an "A/C REQUEST" signal is applied to the A/C AMPLIFIER through the BLOWER SPEED SELECTOR SWITCH, A/C SWITCH FUSE and A/C SWITCH. This prompts the A/C AMPLIFIER to supply the ENGINE CONTROL MODULE (ECM) with an "Idle-Up Signal."

The DUAL PRESSURE SWITCH closes when the pressure in the A/C system is between 193 kPa (28 psi) and 3137 kPa (455 psi). Voltage is then provided to the A/C COMPRESSOR CLUTCH RELAY coil. Whenever the pressure in the A/C system drops below 193 kPa (28 psi) or rises above 3137 kPa (455 psi), the DUAL PRESSURE SWITCH opens, the A/C COMPRESSOR CLUTCH RELAY is de-energized, and voltage to the A/C

COMPRESSOR CLUTCH is interrupted. These conditions arise only under extreme circumstances and when a fault is present, such as a low refrigerant charge.

The ENGINE COOLANT TEMPERATURE (ECT) SWITCH opens when the engine coolant temperature rises above 113° C (235° F). This signal warns the A/C AMPLIFIER that the engine is overheating so that the A/C AMPLIFIER will cut out the A/C COMPRESSOR CLUTCH in order to reduce engine load.

The A/C COMPRESSOR CLUTCH RELAY coil is grounded through the A/C AMPLIFIER at G201, provided that the A/C AMPLIFIER has not received a low temperature signal from the EVAPORATOR THERMISTOR or a high temperature signal from the ENGINE COOLANT TEMPERATURE (ECT) SWITCH and the DUAL PRESSURE SWITCH is closed.

When the relay is energized through the DUAL PRESSURE SWITCH, Battery voltage is applied to the A/C COMPRESSOR CLUTCH through the A/C FUSE and

the contacts of the A/C COMPRESSOR CLUTCH RELAY. Since the A/C COMPRESSOR CLUTCH is permanently grounded, the clutch engages and the compressor operates.

The A/C AMPLIFIER monitors the EVAPORATOR THERMISTOR mounted inside the evaporator housing. The EVAPORATOR THERMISTOR converts evaporator core temperature into a resistance value. Using this

resistance value, the A/C AMPLIFIER can sense when evaporator temperature drops below 0° C (32° F). When this occurs, the A/C AMPLIFIER removes the A/C COMPRESSOR CLUTCH RELAY coil ground. This prevents evaporator frost and ice build-up which reduces air flow and reduces the unit's cooling capacity.