

**Disclaimer**

This document contains information on modifying the electrical circuitry of the vehicle. The author cannot be held liable of any personal injury or damage to the vehicle, should the reader attempt such a modification. Following the procedures contained herein will more than likely void the manufacturer's warranty.

**Overview**

The following instructions allow a Powertrain Control Module (PCM) from an Escort ZX2 S/R to be used in any Escort ZX2 manufactured from 1997 to 1998, with a manual transmission. Early ZX2s have a slightly different circuit design for monitoring the air conditioning system. When attempting to replace the PCM with one from a newer model year, the cooling fan runs constantly at high speed. The air conditioning also does not work properly.

Figure 1 shows the wiring diagram for the A/C Heater of an early ZX2. This circuit uses a 3-wire A/C pressure sensor. The PCM measures a voltage from this sensor on pin 86. This voltage relates to the pressure of the system. When the A/C pressure rises, the PCM turns on the cooling fan.

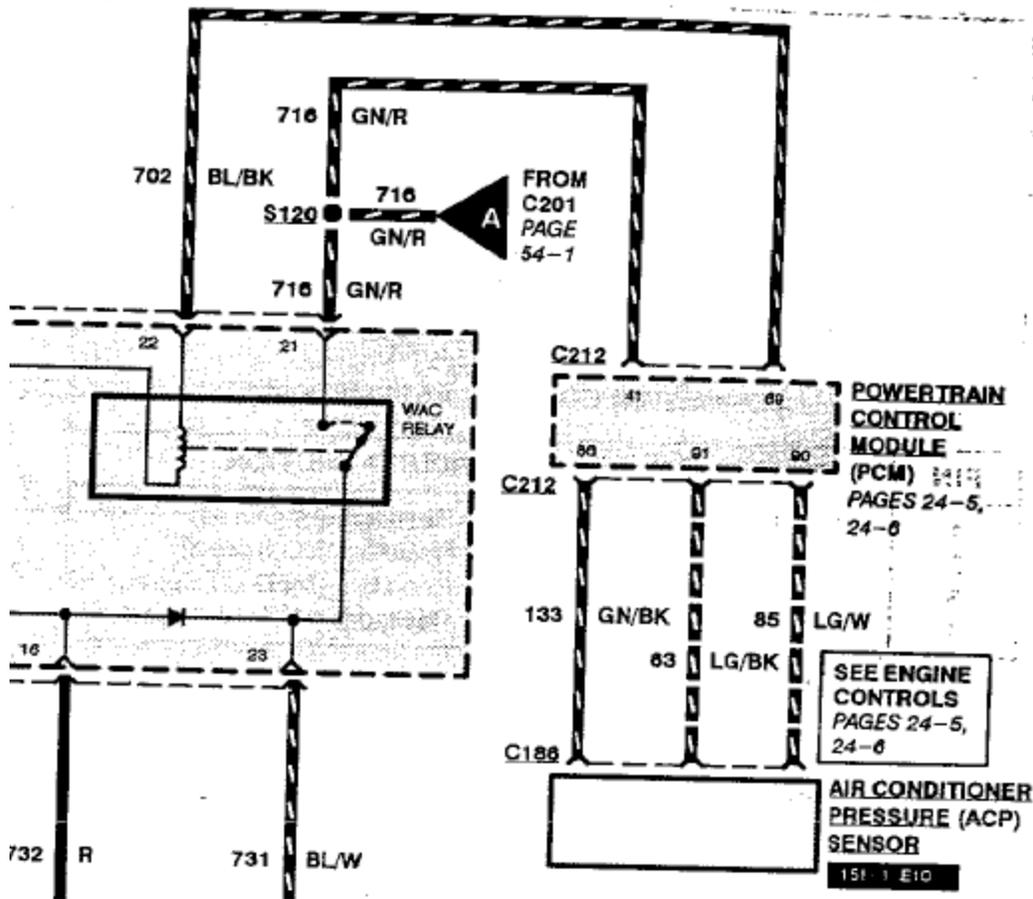


Figure 1 – Early ZX2 A/C High Pressure Circuit

Figure 2 shows the wiring diagram on a newer ZX2. In this circuit, the high pressure sensor is replaced by a 4-wire high pressure switch. The switch has one pair of normally open and one pair of normally closed contacts. Pin 86 is connected to the normally open side of the switch. When the pressure in the air conditioning system increases, the switch is triggered. This causes pin 41 to go open, and pin 86 is grounded, which turns the cooling fan on.

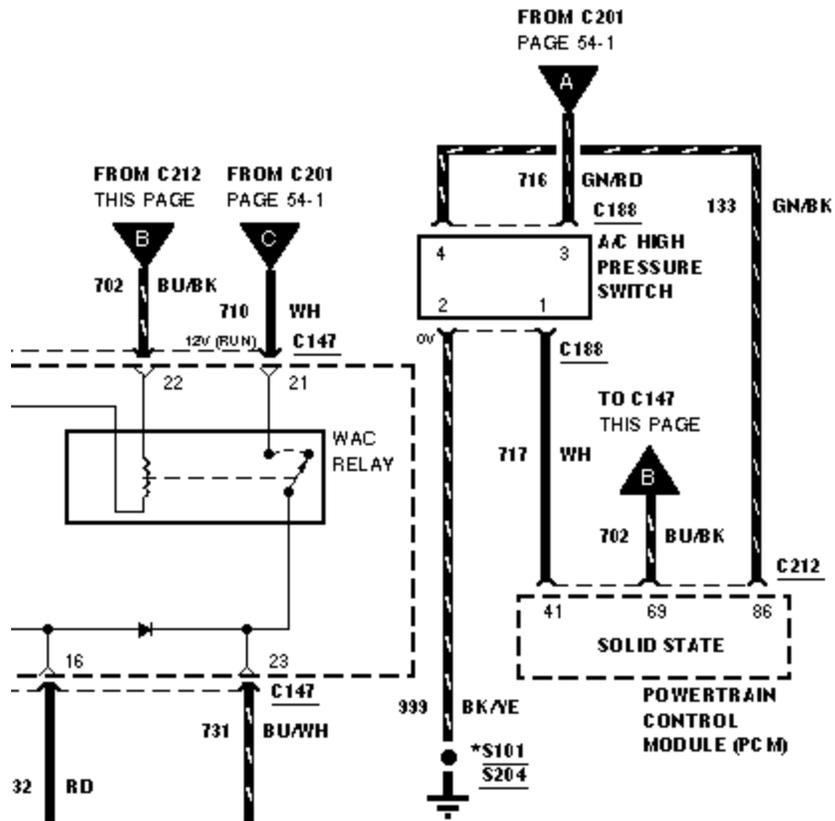


Figure 2 – 99+ ZX2 A/C High Pressure Circuit

The diagram below shows the locations of the A/C low pressure switch and high pressure sensor.



A/C  
LOWPRESSURE  
SWITCH

A/C  
HIGH PRESSURE  
SENSOR

Figure 3 - Sensor/Switch Locations

When attempting to install a newer PCM into an older vehicle, the circuitry makes the PCM believe that the air conditioning system is on and that it is in a high pressure state. This is why the cooling fan constantly runs at high speed. To remedy the situation, we must change the circuit to reflect the diagram of the newer model years.

## Parts Required

1. ZX2 S/R Powertrain Control Module (PCM)  
Part # M12650Z2
2. Constant Control Relay Module (CCRM)  
Part # F8CF-12B577-BC
3. A/C Pressure Cutoff Switch and Connector  
w/6-8" of wire  
Part # F8CF-19D594-AA
4. 18 ga. Hookup wire
5. Crimp-type quick disconnects (Optional)
6. Electrical Tape

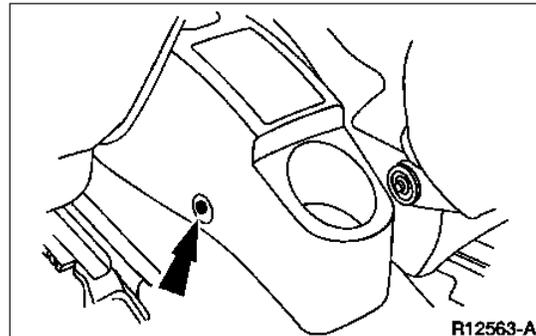


## Installation

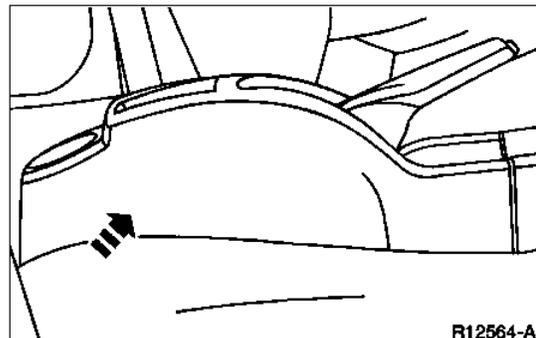
### Step 1. – Disconnect the Battery Ground Cable

### Step 2. – Remove the Parking Brake and Shift Consoles

1. Move both front seats forward.
2. Remove the two screws from the parking brake console panel (one each side).

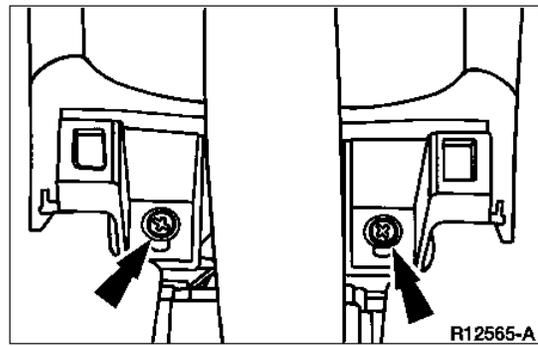


3. Engage the parking brake.
4. Pull upward and remove the parking brake console panel.

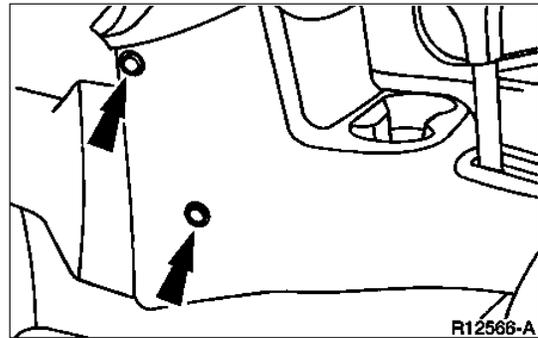


5. Position both front seats rearward.

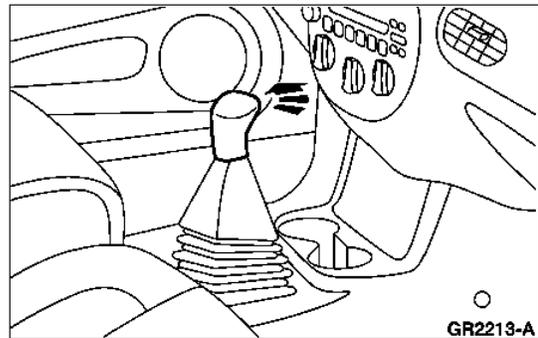
6. Remove the shift console panel screws.



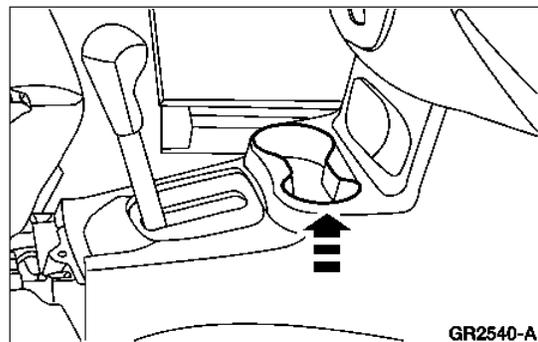
7. Remove the four pushpins (two each side).



8. Remove the gearshift lever knob.



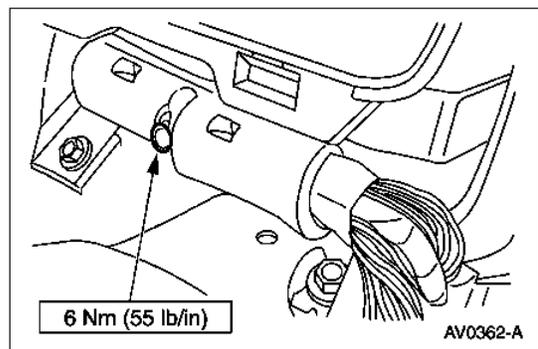
9. Remove the beverage holder from the shift console base.



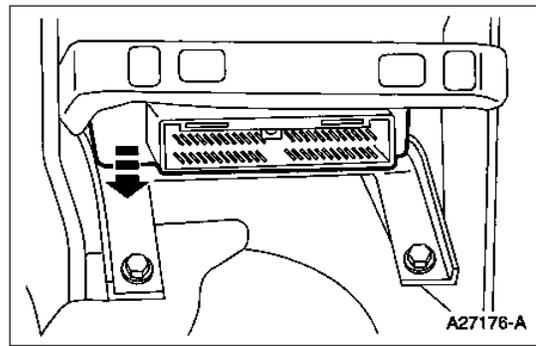
10. Lift upward and remove the shift console panel.

### Step 3. – Install New PCM

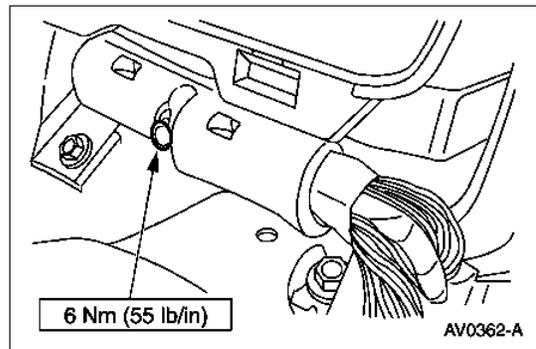
1. Loosen the bolt and disconnect the electrical connector.



2. Slide the powertrain control module (PCM) straight out

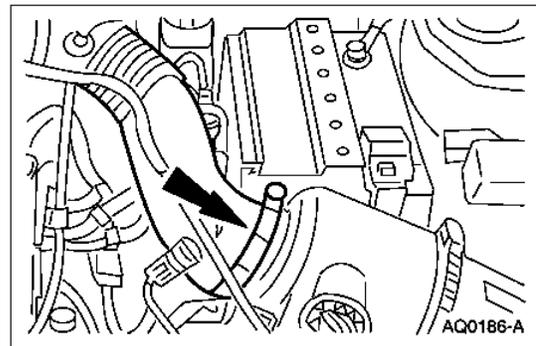


3. To install, reverse the removal procedure.

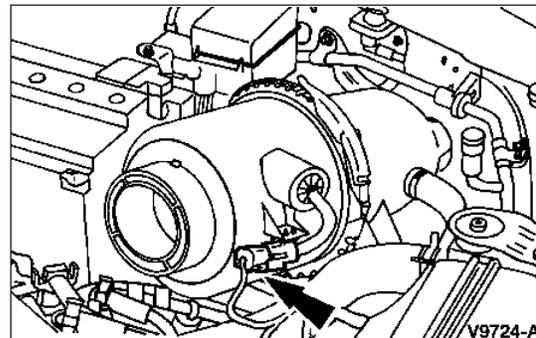


## Step 2. – Remove the Air Cleaner Assembly (if applicable)

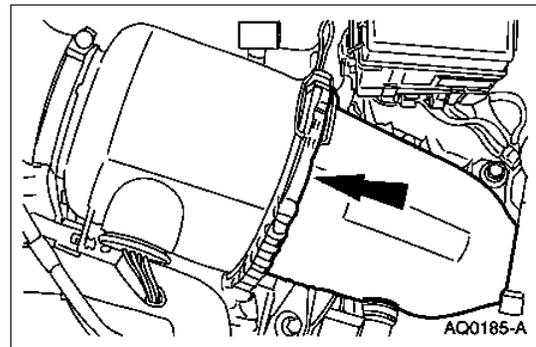
1. Loosen the clamp and separate the air cleaner outlet tube (9B659) from the air cleaner (ACL) (9600).



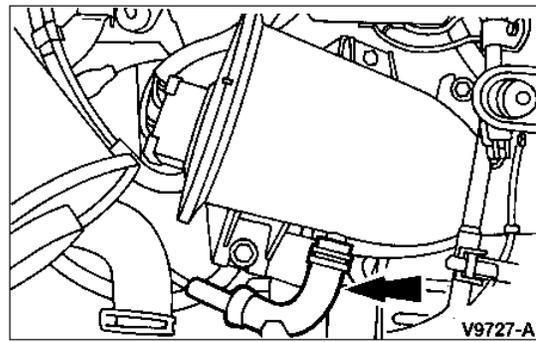
2. Disconnect the mass air flow (MAF) sensor electrical connector.



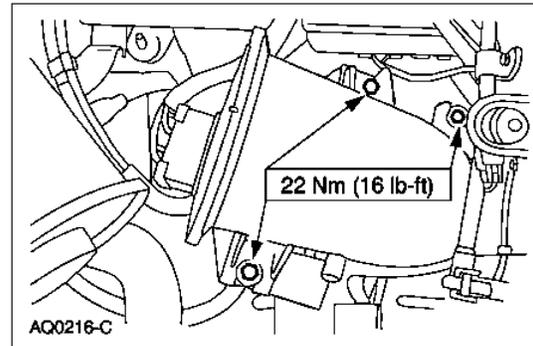
3. Open the air cleaner clamp and remove the air cleaner cover and the air cleaner (ACL) element (9601).



4. Remove the crankcase pressure relief hose.



5. Remove the bolts and remove the air cleaner housing.



### Step 3. – Remove the Constant Control Relay Module (CCRM)

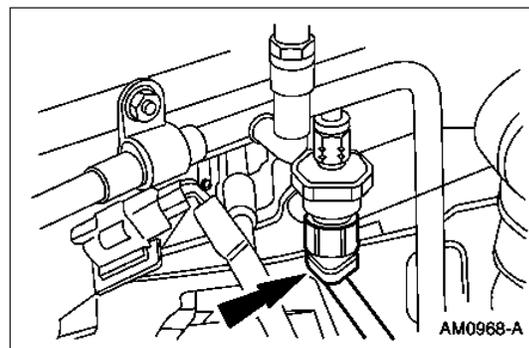
The constant control relay module is located directly underneath the airbox assembly. When the airbox is removed, you may remove the entire bracket assembly by removing the nut and bolt that holds it.

The electrical connector is then disconnected by prying off the plastic cover and using a 5mm socket to loosen the bolt that holds the connector in place.

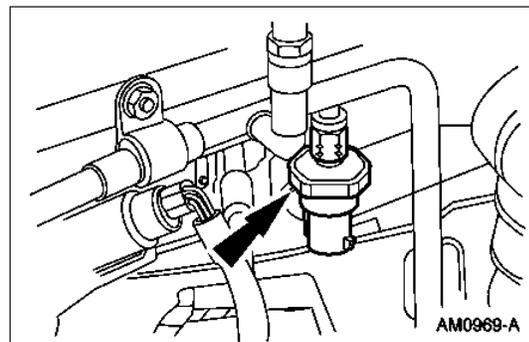
### Step 4. – Remove A/C High Pressure Sensor

The A/C pressure sensor is mounted on a Schrader valve-type fitting on the high pressure side of the condenser to evaporator tube. It is not necessary to discharge the refrigerant system to remove the A/C pressure cutoff switch. Please note that the illustrations below show the high pressure switch, not the sensor. The sensor has a cylindrical shape and has a electrical connector with one dark green and 2 light green wires.

1. Disconnect the A/C pressure sensor electrical connector.



2. Remove the A/C pressure sensor.



### Step 5. – Rewire the A/C circuit

1. Determine the normally closed and normally open contacts of the new high pressure switch. This can be done by checking the continuity of the pins on the switch. The 2 pins which have continuity will be the normally closed pins. The 2 remaining pins will be the normally open contacts. Number the wires on the switch connector, as shown in the diagram below.

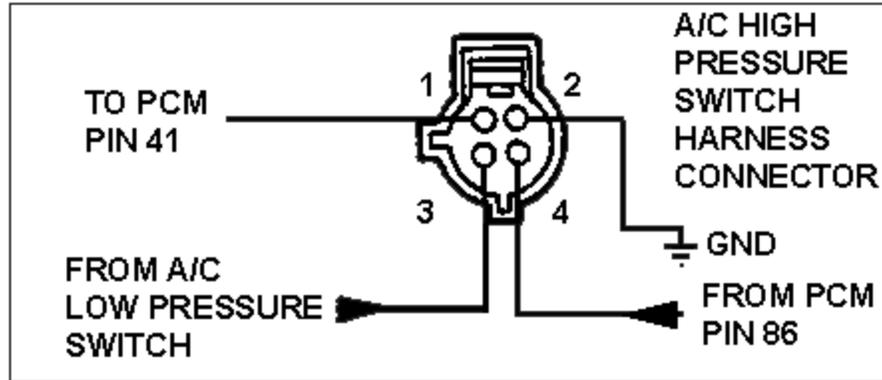


Figure 4 – High Pressure Switch Pinouts

2. Find the A/C low pressure switch, which is located in the engine compartment directly behind the passenger side headlight. The connector has 2 wires, green/red and orange. Get as much slack as you can, it is a tight space to work in. Cut the green wire with the red stripe as far away from the connector as possible. Splice a new 18 ga. wire to the connector side and tape up the other side (this end is not used). Unwind the new wire, so that it is long enough to run from the passenger side headlight, along the fender to the firewall, across the firewall to the driver side, up to the driver side headlight (approx. 15-18 feet). Run the wire back through the fender, following the existing harness. Feed the wire back into the engine compartment with washer pump wire (you may want to remove the passenger side wheels and fender well to do this). Continue along the firewall, following the wiring harnesses to the CCRM.
3. At the CCRM connector, locate the wire that connects to pin 21. This wire should be dark green with a red stripe. Cut the wire, leaving enough slack to splice a wire on each side.
4. At the end of the wire you ran in step 2, splice two additional wires. Connect one of the wires to pin 21 of the CCRM connector, and the other to pin 3 of the high pressure switch connector.
5. Connect the remaining open wire that was cut in step 3 to pin 1 of the high pressure switch.
6. Using the existing low pressure sensor connector, locate and cut the dark green wire with the black stripe. Connect the harness side of this wire to pin 4 of the high pressure switch connector.
7. The remaining wire on the high pressure switch should be grounded. Splice this wire into pin 15 of the CCRM. Do not cut the wire to pin 15, as this also provides ground to the CCRM itself.
8. When finished, the wiring should look similar to the diagram in Figure 5.

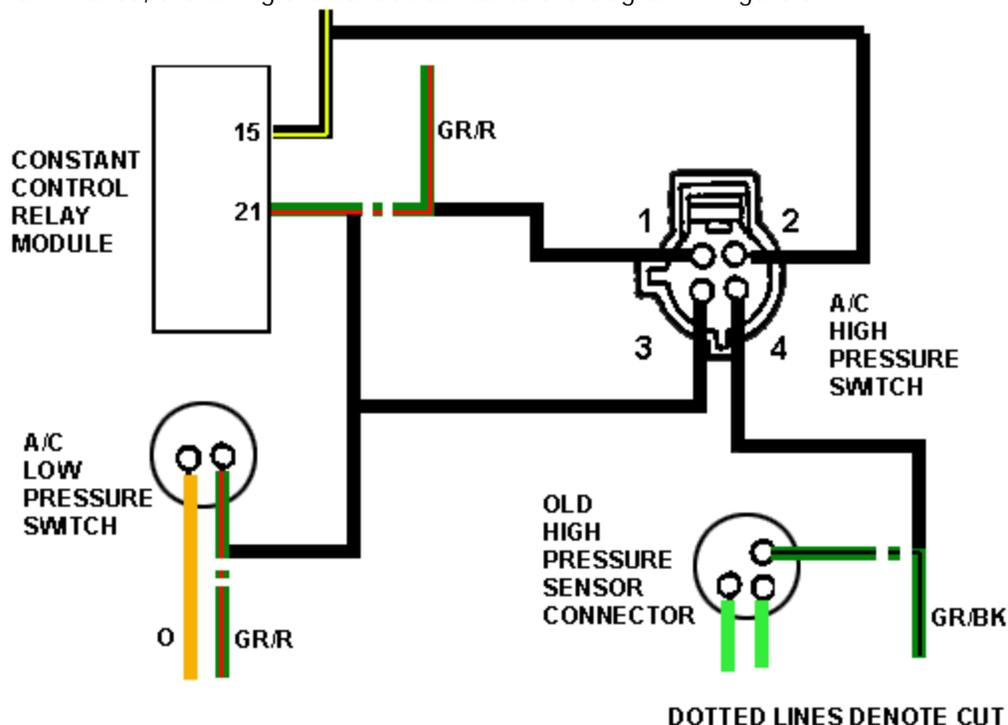


Figure 5 - A/C Circuit Re-wire

9. Tape and secure all wiring.
10. Install the new CCRM
11. Install the Airbox Assembly
12. Connect the Battery Ground cable.
13. Start the engine and test. The cooling fan should not run when the car is initially started. If it does, check the wiring at the high pressure switch. Test the operation of the engine. The fan should only run when the engine has been run for a period of time, or if the air conditioning is on, and pressure builds up in the A/C system.