FC HARNESS HOOKUP INSTRUCTIONS

The website that has all years PCM pinouts

http://www.ls2.com/forums/showthread.php?s=&threaded=19273 has the LS1 PCM pinouts, if you are interested in knowing this info.

You may contact me by PM (danzan149.

You will need a wire stripper-crimper tool, and crimp on wire couplings& wire nuts. Also, a soldering iron, flux & solder.

You will need either a multimeter, or a voltage tester, & continuity checker. to verify that you have identified the correct mazda wires to hook up the various harness wires.

You will need a cable to electric converter box & the dakota digital SG-5 signal conditioner. ($85), or a smart speedometer, to get the speedometer working.

Each loose wire coming out of the harness is color coded & labeled for identification.

Main power: Run one #4 AWG cable from battery - to chassis ground. Run one #4 AWG cable from battery + to the alternator, and then to the starter. You may reverse the order of hookup. All lugs should be soldered on. All grounding points should be sanded down to bare metal.

The engine block should be grounded on both sides, with a #4 AWG cable. The strut tower bolts are a good place.

You need to remove the A/C evaporator, which is on the firewall, under the glove compartment, so that you can get the harness connectors through the firewall. you do not have to remove the ABS. Leave the evaporator out until you finish the wiring connections in that area.

Ground the brown low coolant wire to keep the dash from beeping at you.

This wire went to the overflow coolant tank.

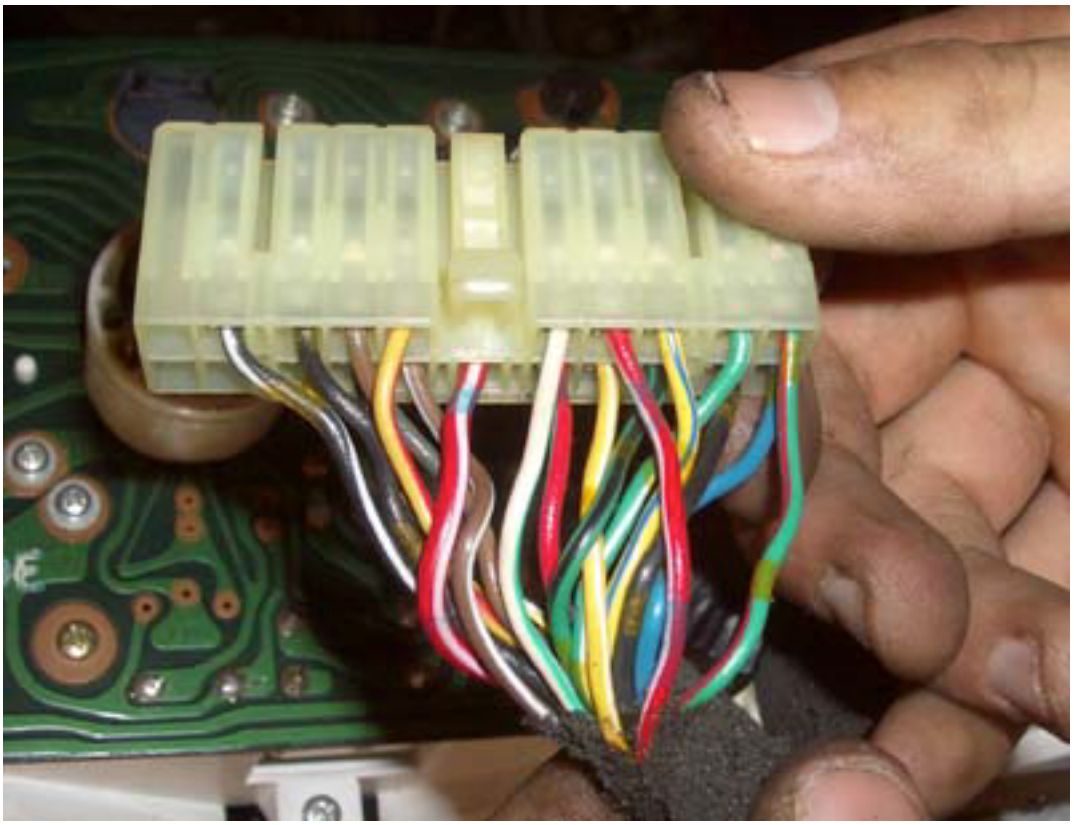
Find ignition-on power & constant power. ignition-on power is the black/yellow wire coming from the ignition switch. Constant power is the black wire on the ignition switch.

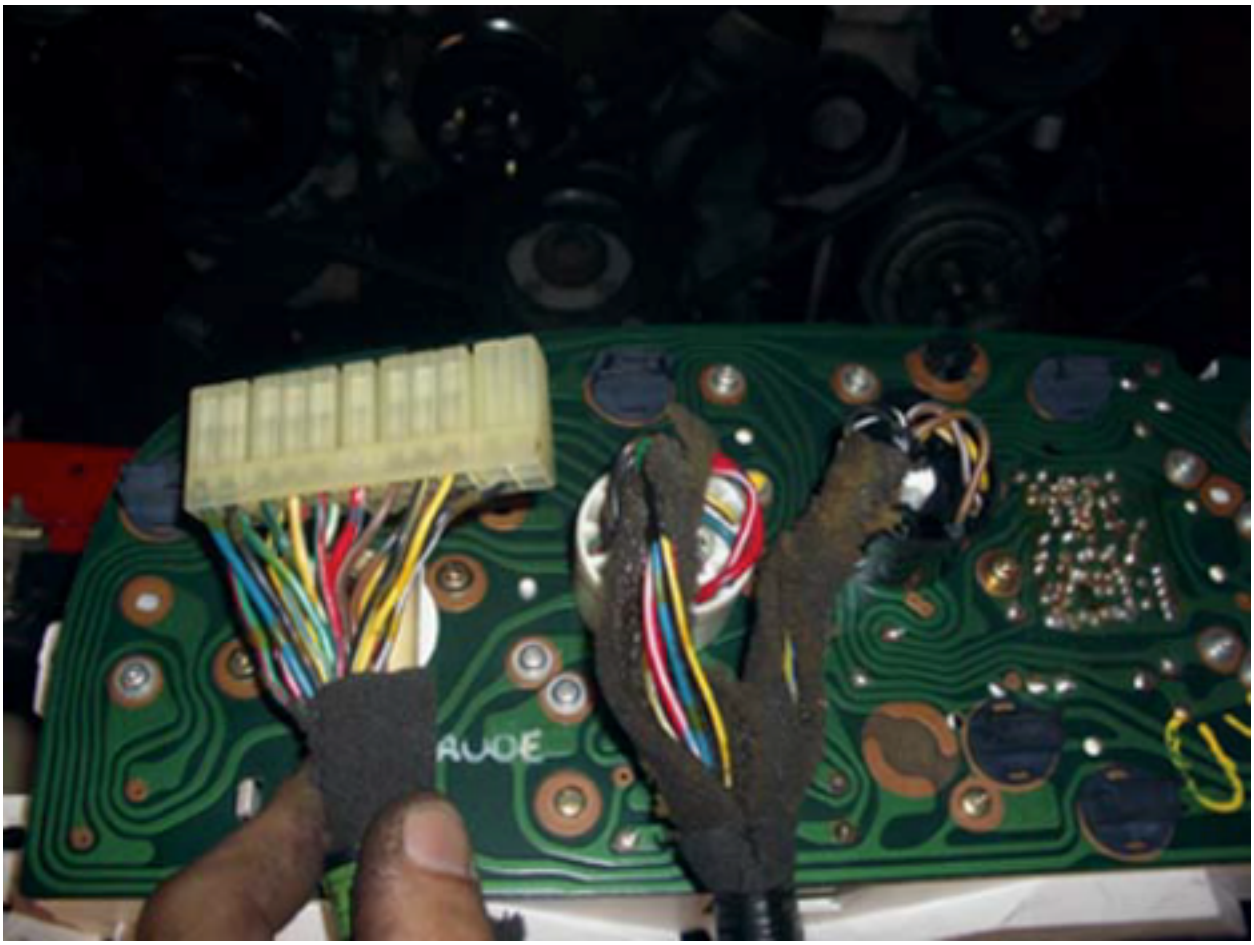
PCM power: Orange wire to 12 volts constant. Pink wire to 12 volts ignition-on.

Fuel Pump Relay: Connect the dark green/white wire coming from the harness to the coil of a 30 amp, 12 volt, N.O. relay. Ground the other side of the relay coil. Run ignition-on power to one contact of the relay. Connect the other relay contact to the blue mazda wire, going to to the fuel pump. Use #10 minimum gauge wire for the power wires, & #14 for the relay coil.

Several of the wires are to be connected to connector C-02, or C-03. these connectors are located on the back of the gauge cluster. It can be easily removed by removing the shroud on the ignition switch column, & then the gauge cluster.

In later models, the connectors are circular. The wire colors are the same. The wires are on the left most connector.





Run a wire to the Mazda oil pressure sensor. The sensor needs to be tapped into the LS1, near the oil filter, or the stock LS1 location can be used, with an adaptor. the other end of the wire goes directly to the oil pressure gauge. Yellow/red wire, located on connector X-4, which is mounted on the driver side fender, near the firewall, or on connector C-02.

Tachometer: Find the yellow/blue wire coming from the Mazda tach. this wire can be located on the main instrument panel connector, C-02, or on connector C-03. C-03 is a 21 pin, two row connector, on the back of the gauge cluster. Connect this wire to the white wire coming out of the harness.

Water Temperature Gauge: Connect one yellow/black harness wire to the temperature sender & the other yellow/black wire to the yellow/white on C-03 or C-03.

Speedometer: If you have an electric speedometer, connect the

harness purple/white, wire to the signal input of your speedometer cable to signal converter box.

Starter: The heavy purple wire goes to the starter motor solenoid terminal. The other end goes to the start position of the ignition switch. The ignition switch wire to connect to is the black/red.

Radiator fan: You are using a single, two speed fan. Your fan will have 3 wires. A high speed wire, a low speed wire & a ground wire. You will need two N.O. relays & one N.C. relay.

Ground the lugs to hard chassis ground points, such as the strut tower bolts. It is also important to ground the block to the chassis on both sides. The battery should also be grounded to the chassis. use #2AWG cable. Sand the paint off to ensure a good contact.

Reverse Lights: The reverse lights are not controlled by the PCM, so the wiring is not part of the harness. There are two wires on the plug. The plug is the only one on the passenger side of the transmission case. Connect one wire to Ignition-on power, Connect the other wire to the red wire that goes to the backup lights. The easiest place to find this wire is at the rear of the car, behind the trunk trim. It does not matter which of the plug wires you use for power or lights.

Reverse lockout: Hook the light green harness wire to either plug wire. Hook the other plug wire to ground.

Check engine light: Connect brown/white coming from the harness to a 12 volt, 2 watt lamp. Ground the other side of the lamp.

OBD2: The OBD2 connector is missing. The best source is .a junk yard. Any 1996 & up car is fine. Your harness wire is labeled.

The obd 2 connector, is a black or gray female connector. it is trapezoidal. 2 rows of 8 slots. only 4 are used. looking at the open end of the connector. the upper left pin, is 12 volts constant. the 4th & 5th pins in the bottom row are ground. the 7th pin is serial data. That is the dark green wire .

A/C: I have written up both the GM & Mazda methods. You should wire a condensor pusher fan, in parallel with the clutch, with either method.

A/C GM Method

The following is based on RAO's work & is used here with his permission. I have never done this myself, and know no one else, who is successfully running the A/C this way. There is a pic of the GM sensor & fitting included here.

http://www.v8rx7forum.com/v8-rx7-non-technical/36782-got-ac-working-ls1-pcm-least-few-minutes-5.html

AC request: +12 into the ECU. You may control this with a separate switch, or wire it into your dash A/C switch.

The Mazda AC switch actually goes to ground when it is pressed so tap into it up front and use a new relay to generate the AC request signal to the PCM, and then the other side of the switch to the PCM wire.

A/C clutch: The PCM grounds this wire it wants the AC on. 12 volts ignition-on, thru a N.O. relay coil to the PCM wire.

AC clutch status: Tie this to the clutch + wire so the PCM knows if the clutch is actually on.

A/C Mazda Method

Several of us are successful & happy with this method.

The mazda A/C relay already has the A/C clutch wire, it is the B/R wire that hooks to the mazda A/C compressor. The GM A/C clutch wire is dk grn and is on the compressor plug. Cut the GM wire (compressor side) & hook it to the B/R mazda wire. The GM compressor is already grounded thru the G/M harness. Make sure that the A/C relay coil is wired in series with the pressure sensor.

You should use an A/C pusher fan. Leave the #1 fan relay hooked up and use it to power the A/C fan.

If you have an A/C shop do the plumbing, electrical hookup, pump down and charge, they will convert the Mazda system to refrigerant 134A.

If you choose to do the job yourself, please note that the Mazda pressure switch is a two pressure switch which closes if the suction side pressure is between approximately 196 and 30 PSI. These values are not ideal for R134A. The LS1 system was designed for R134A and uses a separate sensor for low and high pressure cut off.

The solution is to use Freeze12. it is EPA authorized, is non flammable, & cools better than either R12, or R134. It is also far less expensive.

You will also need a condensor pusher fan.

Take your condensor, drier, & The aluminum tubing that connects to the firewall fittings, drier & condensor to a hose shop. Also take the LS1 compressor manifold.

You need 1 hose to go from the compressor discharge to the condensor high side. 1 hose to go from the condensor low site to the drier. 1 hose from the drier to the firewall inlet. 1 hose to go from the firewall outlet (large fitting) to the compressor suction port. Leafe the shraeder fittings on the firewall tubing, & the pressure switch on the drier outlet tubing.

Wiring: violet, to pressure switch, to the A/C relay coil, to ground. 12 volt constant, to relay contact, to clutch, to ground & to pusher fan, to ground There are 2 wires on the clutch. The black is ground & the green/black goes to the relay contact. if you do not have the violet, have someone stand on the passenger side, turn the ignition & blower on & press the A/C button. the light should go on & a relay, in the engine compartment will click. this is the relay to use. The relay will have two thick wires & two thin wires. one of the thin wires goes directly to ground. the other wire is the "violet" substitute. follow

the above instructions, using the substitute wire.

Then have the hose shop pump the system down. Leave it under vacuum for at least 24 hours to make sure there are no leaks, & to de moisturize the drier desiccant.

Then charge the system, using the freeze12 instructions & fittings.