It's not until it's your turn to swap out the old heater core on a 1st Generation Riviera that you'll start to sit up and listen and search the manual or tech bulletins on tips on how to do this with the minimum amount of work and head aches.

I heard it was possible to take a big short cut by extracting the core from the engine side of the firewall. It requires the opening up of the hole by 1/4" all round so the core can fit through. I tried this but could not see how to fit any cutting tools to do this with the engine in place.

THE PROCEDURE I USED

On the Engine Side
1) Remove 7 speed nuts around the air inlet assembly on the engine side. There is a 8th speed nut below the assembly cover which can be removed after the cover is off and out of the way.
   To help ease the cover off you should loosen the "outside air door and case assembly". Also remove the "suction throttle valve support bracket"

Tools required: 7/16" ring & open ended spanner (wrench) and a deep 7/16" socket and ratchet wrench for the speed nuts and various spanners and sockets for the rest.
Removing the distributor will give you a bit more room to work but is not essential.
Tip: If you do remove distributor remember where the rotor is positioned so you can re-insert it in the correct way and not 180deg out.

On the Interior Side
1) Start by removing at least the passenger seat and the console, radio and centre air vent and rectangular duct.
Tip: Gear knob screws off to enable console upwards. (I removed both seats as I like space to work and I was having new carpet installed anyway)

2) With the console out of the way, the wiring loom in the console needs to be unclipped from the cardboard ducting and set to one side.
3) Pull all the cardboard ducting rearwards and set aside.
4) Remove the metal duct from the bottom of the heater box (2 screws)
5) Detach left outlet duct and move "plastic distribution duct" leftwards to disconnect from the evaporator.
6) Detach the blue ended cable from the heater box.

7) Remove the glove box liner and disconnect the RH duct going to the eyeball outlet or do it from underneath.
8) Remove the two brackets supporting the "evaporator box" located under the glove
compartment and pull the box down to the floor and as far right as possible. This will give you the clearance to maneuver the heater core box out from under the dash.

9) As you pull on the heater box from under the dash there will be resistance from the firewall insulation pad so try to pry the material away from the joining face and studs to minimize damage to firewall insulation material. You will need it in best condition for a good seal later.

10) Once it comes away a few inches, remove the left and right discharge outlets to minimise their damage and space required to flip the heater box and get it out.

11) Flip the box onto it's back and manouvre to the right as shown below.
On the Bench
1) Remove the two screws on the left and right side of the outer box.
2) Separate the core box from the outer box.
3) Remove all the screws holding each end of the core in place and extract the old core.
Reverse the procedure at this point for installation of new core.

Tip: Instead of using messy caulking compound, I bought a roll of self adhesive rubber stripping used to seal gaps around windows which worked very well.