Evaporator rebuilt

Let's now move on to the most crucial part of our project; rebuilding the evaporator/heater unit. As you will see from the photos the rebuilt is quite challenging. The unit had surely seen better days - the evaporator cover has a big opening on the front and the coolant cut off switch is broken. Let's see what is hidden inside...

Front view. Notice the big opening and the broken lever of the coolant cut off switch.

Rear view showing hot/cold air servo motor and air flow direction ducts (feet)

Side views showing servo motor regulating interior/exterior air circulation, blower motor resistor, power connectors, air flow direction ducts.

Side view showing A/C and heater piping. Upper pipes are for the heater matrix and lower pipes are for the A/C evaporator.

Let's start removing the front cover screws

Remove the servo motor actuating rods. Be careful at the plastic keepers as they might be brittle and break easily.

Remove bowden cable, and coolant cut off switch bracket...

... assembly is out.

Blower motor exposed ...

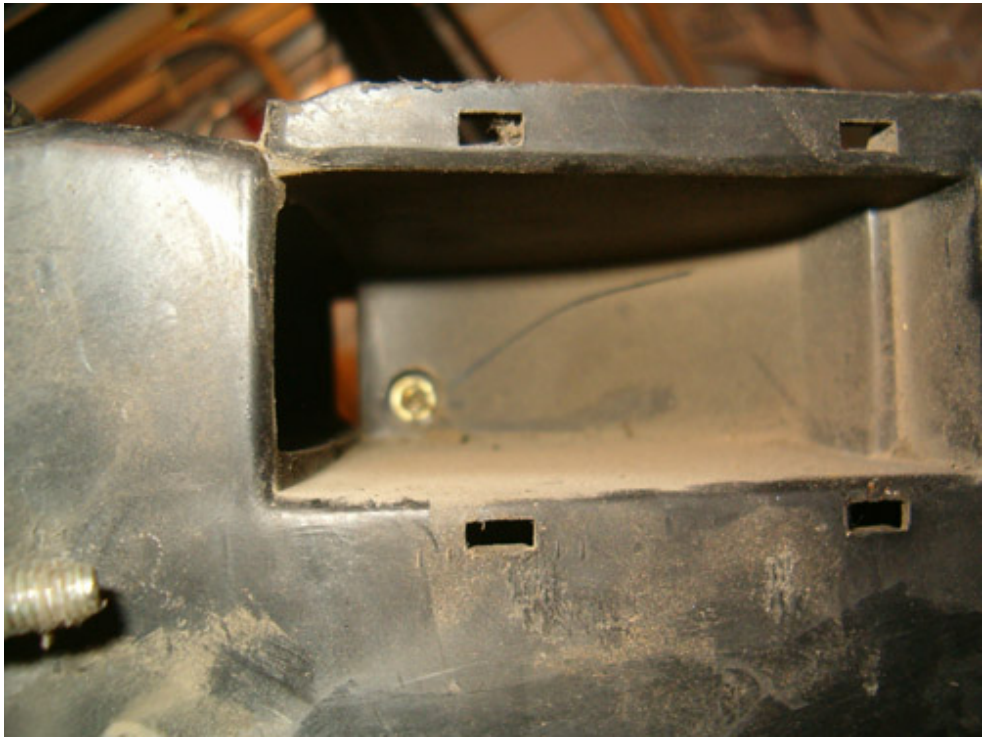
... and a hell of dirt and dust inside

Notice the interior/exterior air circulation flaps. The foam material is collapsing!

Let's now remove the evaporator side cover

Evaporator piping. This is the part that actually delivers conditioned air; hot Freon in liquid form enters the lower pipe and having removed heat and humidity out of the passenger compartment exits through the upper pipe in gas form.

Don't forget to remove the servo motor actuating rod for the interior/exterior air circulation flaps



It's now time to split the evaporator covers. The unit comprises from two halves held together by many screws (either hidden or easily seen)

Remove lower plate. This is actually the drain plate of the evaporator

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Almost split in half ...

One half is out and you can actually see the layout of the unit.

I think I have a pretty hell of a job here...everything is a mess. Notice the dark color of the foam in the right side of the evaporator; wait, this is a bad sign...

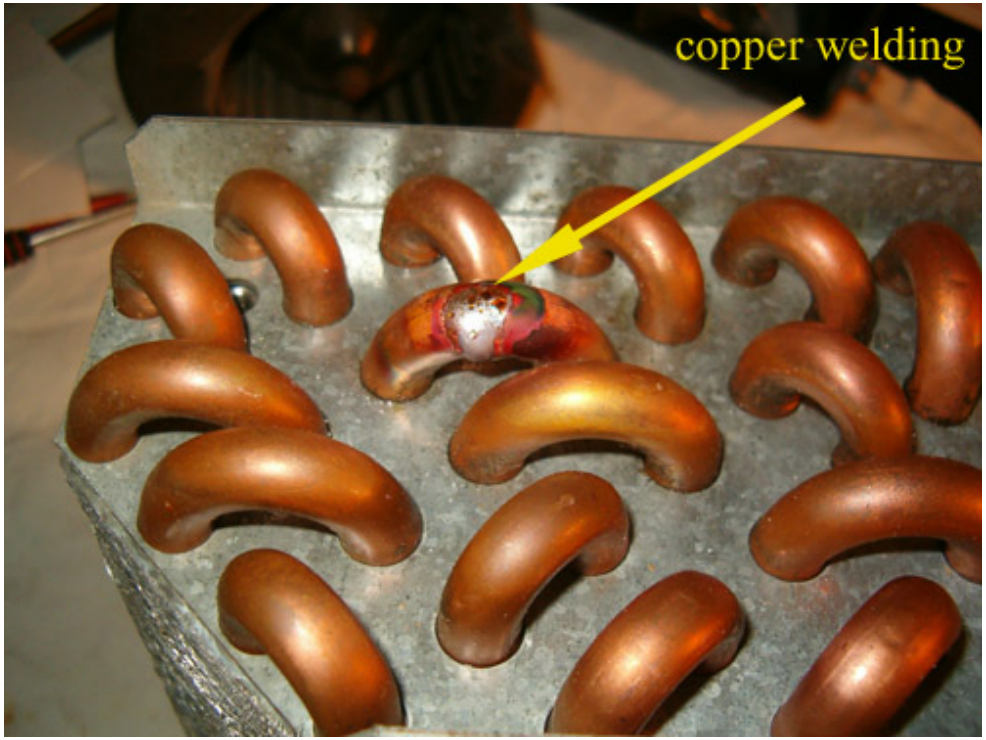
It is a wise idea to soak everything overnight in hot water and soap.

Remove servo motor from cover...

... and se sure to keep them in small bags by indicating their position and function. This is the best practice in order to remember their original position during assembly.

This is the evaporator. The fins surely need to be combed and aligned in a straight line.

Remember saying about a bad sign? Well this is true; one of the copper lines has a pin sized hole... This is the reason of the dark color on the foam, Freon and oil were leaking...



Fortunately this was easy to repair. A big thanks to my neighbor Bill who had the right gear to solder copper lines!

This material is used to insulate evaporator pipes in order to compensate for cooling loss.

Remove the old material from the pipes ...

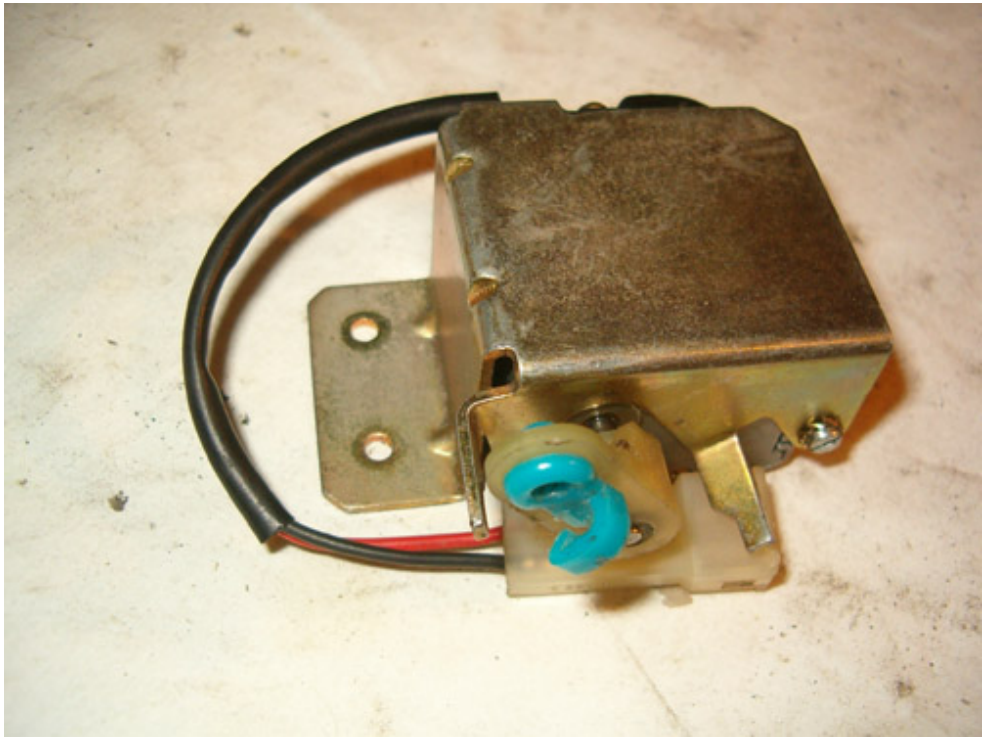
... and wrap the lines with cork tape. A notice here; the sensor you see clamped on the evaporator pipe is the so called Frost Sensor. This sensor gives input to the electronic thermostat when temperature reaches freezing levels in order to seize operation of compressor and condenser fans. Otherwise ice will form on the pipes and evaporator which means Freon has not fully evaporated; this will result in compressor failure because liquid does not compress!

Let's now move on to the blower motor.

Open the case ...

Clean and lubricate the motor...

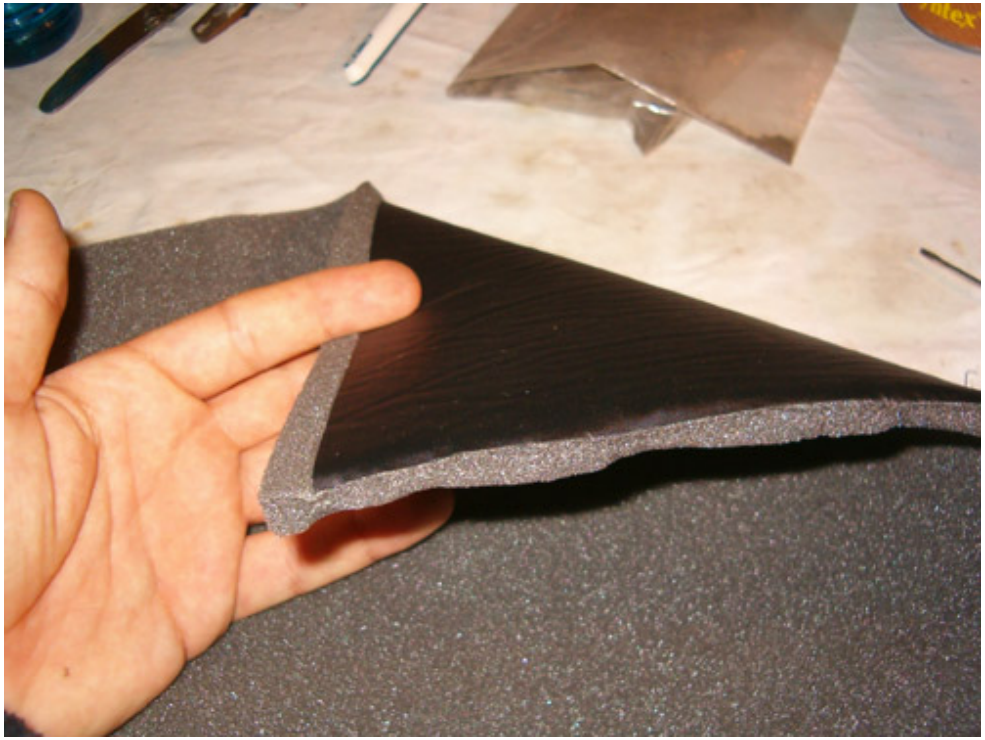
and put it back together.



Do the same for the servo motors. Cleaning and oiling them is more than enough.

Evaporator half covers after thorough cleaning...

Air direction flap after cleaning. Be sure to remove every trace of old glue.

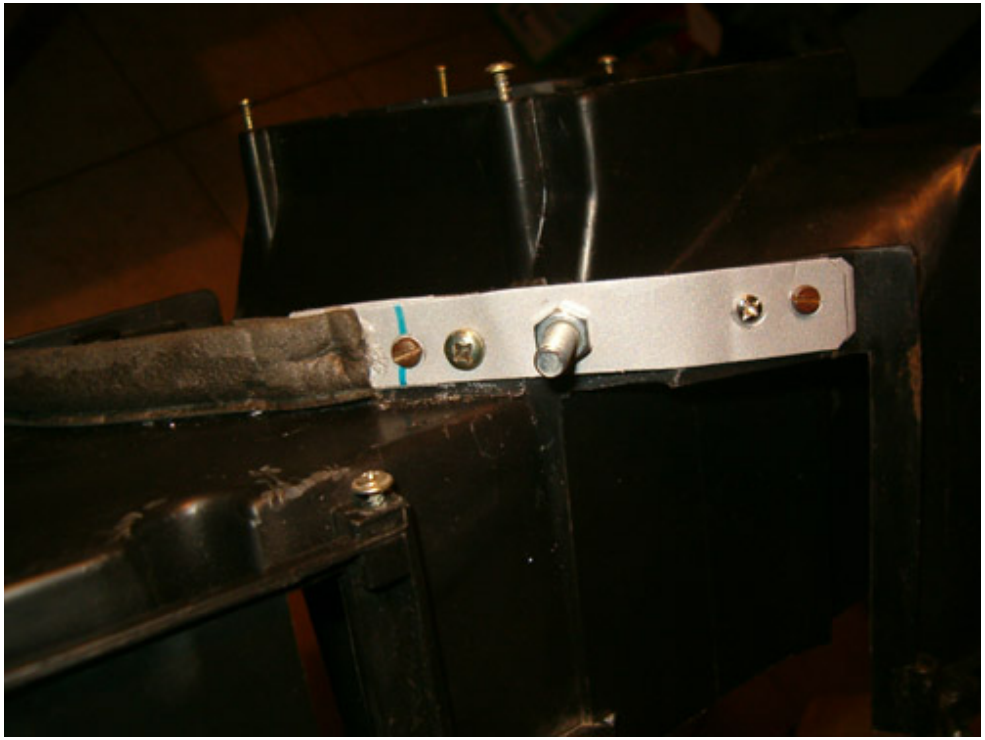


New foam material...

... and rubber adhesive.

After measuring and cutting in the proper dimensions, glue the pieces together.

One of the four support points of the unit broke during removal from the donor car, so I had to fabricate one...



from another angle

I now think it is time to start assembly. I decided to discard the original heater matrix of the evaporator since it past was unknown. After all I had the matrix replaced in my car some months ago when it was leaking badly, so I will use that one since it is almost like new.

It now gets into shape...

... and looking as good as new!

From another angle.

Front part showing evaporator, air flow flaps, and evaporator pipes

Blower motor is in place.

A new cover was bought ...

... and put back together along with servo motor.

New coolant cut off switch

Heater matrix pipes are in place and new expansion valve is installed along with new O-rings all intended for use with R134a.

Cover the expansion valve since it should be free of dirt or dust in order to function correctly.

Before installation to the car we should take a look at the harness.