

C4 Heater Core Replacement by Dave F. (with Sean D. And Goran D.) March 2013

This is based on several sources including:

1. [Kinderutz's 2.5 hr miracle heater core R&R DIY](#) – no console removal – big time saver
2. [Fred M's Temperature Flap Motor R&R pdf](#) – great DIY, great photos (Labeled in green)
3. [Fred M's HVAC Heater blower R&R DIY](#) – great DIY, great photos (Labeled in green)
4. [Austinado16's Heater Core DIY from the C4 100/A6 forum](#) – included console removal
5. [ThetaTau87's Heater Core DIY based on Austinado16's DIY](#) – also included console removal
6. [UrS4boy's HVAC system component's post](#) – shows the general components of the C4 HVAC system
7. [WikiHow C4 Heater Core DIY \(to be avoided\)](#) – some good photos but still a console out DIY
8. [Edzgarage Nightmare C4 Heater Core DIY video \(takes the dash out – yikes!!\) \(to be totally avoided\)](#) This is one of the main reasons for this current DIY pdf, to avoid that total waste of time
9. Hints provided locally by Gabriel C. (Iskolnick to quattroworlders) via email
10. Hints provided locally by Goran D. (Gortec Machining, owner of 2 UrS6s) who “trained” under Iskolnick.
11. Hands on work by Sean D. (quattro20v), Goran D. and Dave F. (UrS4boy) on Sean’s 97 UrS6 following kinderutz’s descriptive words - including photos taken by Dave F.
12. Photos from Mark A. (Thefeek) and others (Thanks to all).

Preliminaries:

Before you start, you have to know that this isn’t a job that you will want to do more than every 10 years. As a result, you want to use the good OE parts from a dealer or GVAP (who is an internet sales at a dealer). You DO NOT WANT the cheap aftermarket parts that will likely fail in under a year. Time is money. Buy OE.

You will want to buy:

1. The heater core: Item 1 below, PN 443819030 (same for LHD and RHD) – plastic end tanks and aluminum heat exchanger matrix (even the OE heater cores have plastic end tanks) – best bought from an Audi dealership – aftermarket cores aren’t lasting very long.
2. Sealant – 5 ft of OE foam, new airbox seal, PN 431 819 225, or hardware store 3/8"x3/4" self-adhesive closed cell black foam or glazer’s tape
3. Solvent to clean off the old sealing foam off the heater box and the C4 body
4. High Temp RTV (e.g. Permatex Grey) sealant to seal the new core to the heater box.
5. Heater fan – you are going to have to remove it anyway, might as well replace it, PN 4A0959101A
6. The bleeder valve: Item 11 below, PN 4A1819373F (pricy – optional –can be done later)
7. The heater control valve: Item 17 below, PN 4A0819809 (LHD, RHD =893819809) (optional – can be done later)
- 8.

Tools you might want to have handy

Based on Austinado16’s post:

- Philips screwdriver – normal and **very** long (12”),
- a slotted screwdriver
- Wide blade tool like a gasket scraper
- Dental pick or seal removal tool (long thin, with a hook at the end)
- Magnet (telescoping) for the inevitable “oops”.
- 8 mm and 10 mm ¼” drive sockets,
- 13 mm 3/8” drive socket
- 12" long ¼” drive extension
- 5 mm and 6mm Allen sockets (3/8” drive typically)

The first steps

Here is what kinderutz said: "opened the hood, took cowl cover off, wipers off, plastic (wiper linkage) cover off, wiper linkage off, heater box strap off, disconnected vacuum hose from the heater valve and lay to side, remove the 1 Phillips bolt that holds a solenoid attached to the heater box and lay to the side with the other hose i just disconnected as well as the connector to the wiper motor."

Let's go through that now in photos (borrowed from Fred M.'s DIYs – don't worry about the photo numbers, I am following kinderutz's instructions, different order than Fred's photos, in some cases)

1. **Took the cowl (aka plenum) cover off** (four clips, lift up and slide out):



2. **Wipers off:** Pry off the plastic cap. Remove 13 mm nut and wiggle/pry the arms off.



3. **Plastic (wiper linkage) cover off** (actually two parts, the first metal, the second plastic):
Metal part is held on by four 5 mm Allen head bolts:



Now the plastic wiper assembly shroud (4 to 7 clips):



You now should have the two parts off, lay them aside in a safe place:



4. **Wiper linkage off.** There are four bolts that hold the wiper linkage on and one electrical connector to the wiper motor:



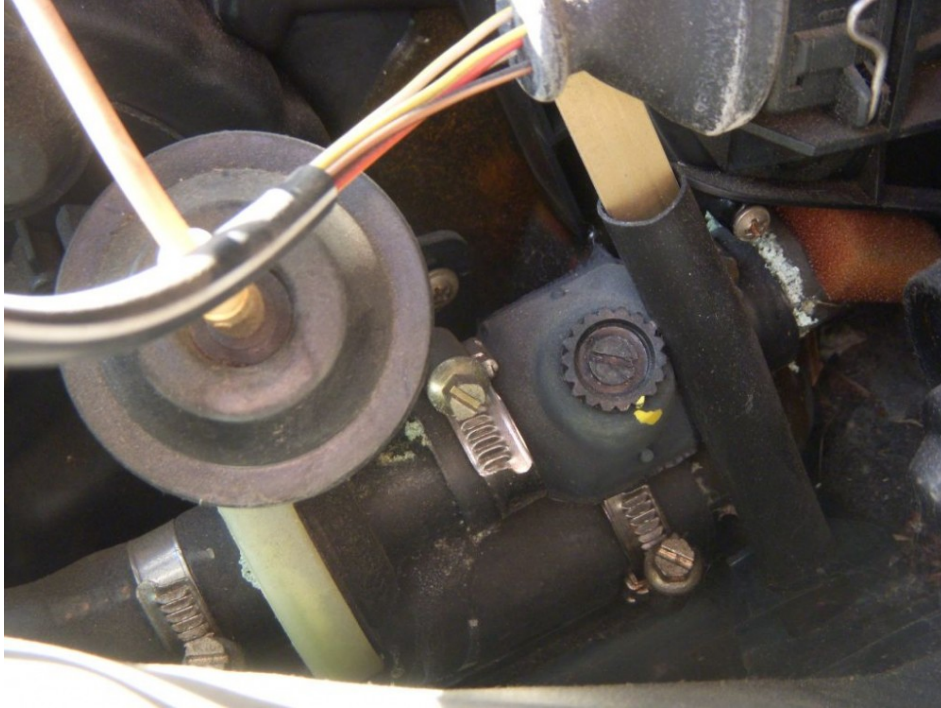
Carefully remove the wiper linkage and motor and set safely aside:



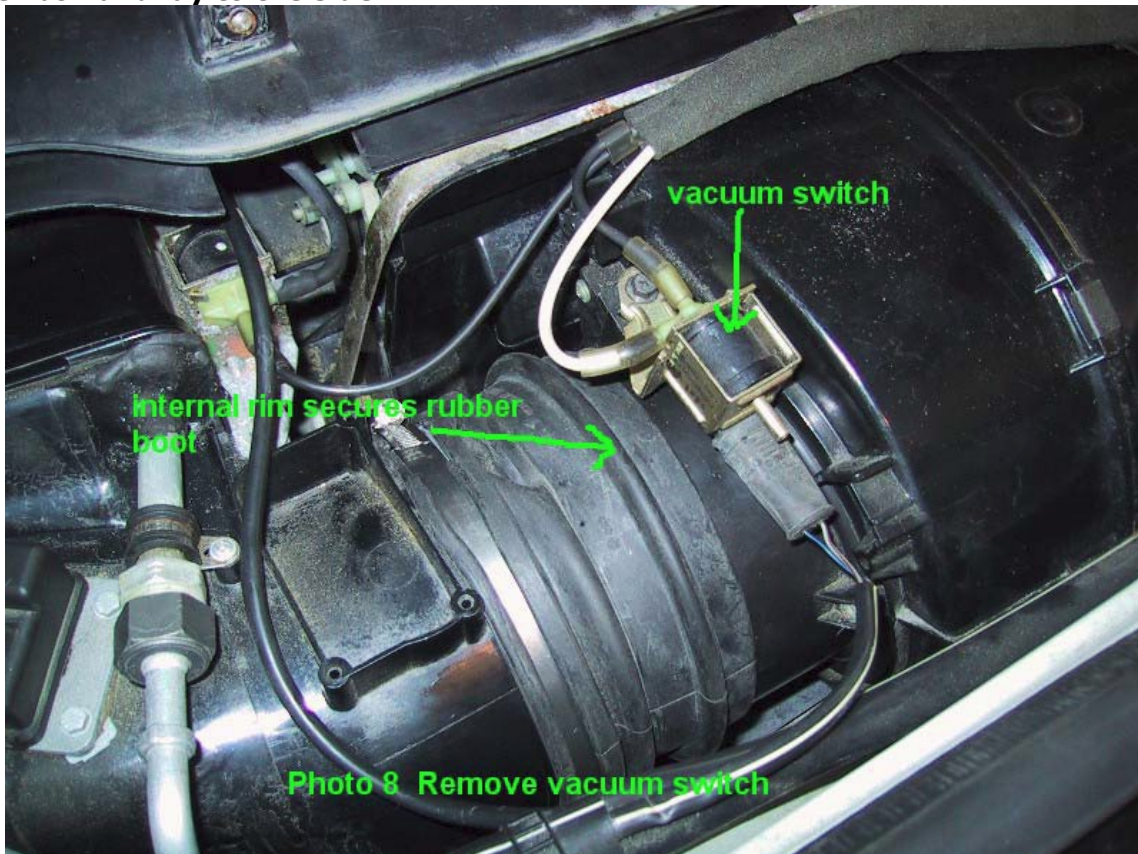
5. **Heater box strap off.** This is a two-piece galvanized metal strap that holds the heater box into the C4 chassis. Loosen the clamp until the two parts separate and remove both parts and set aside. These can be rusty, depending on the history of your UrS.



6. **Disconnect the vacuum hose from the heater valve and lay to side.** This photo shows the heater control valve and vacuum line in question going into the center of the valve. It also shows the bleeder valve (the thing with the flat blade screwdriver slot and the cerated edge).



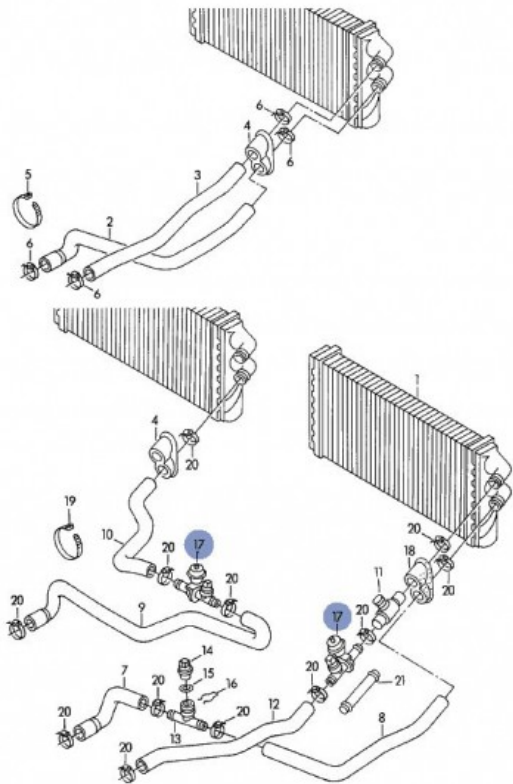
7. **Remove the 1 Phillips-head bolt that holds a vacuum solenoid/switch attached to the heater box and lay to the side:**



8. **Disconnect Any Wiring Connectors not already disconnected** (kinder didn't mention the flap motor connector show here):

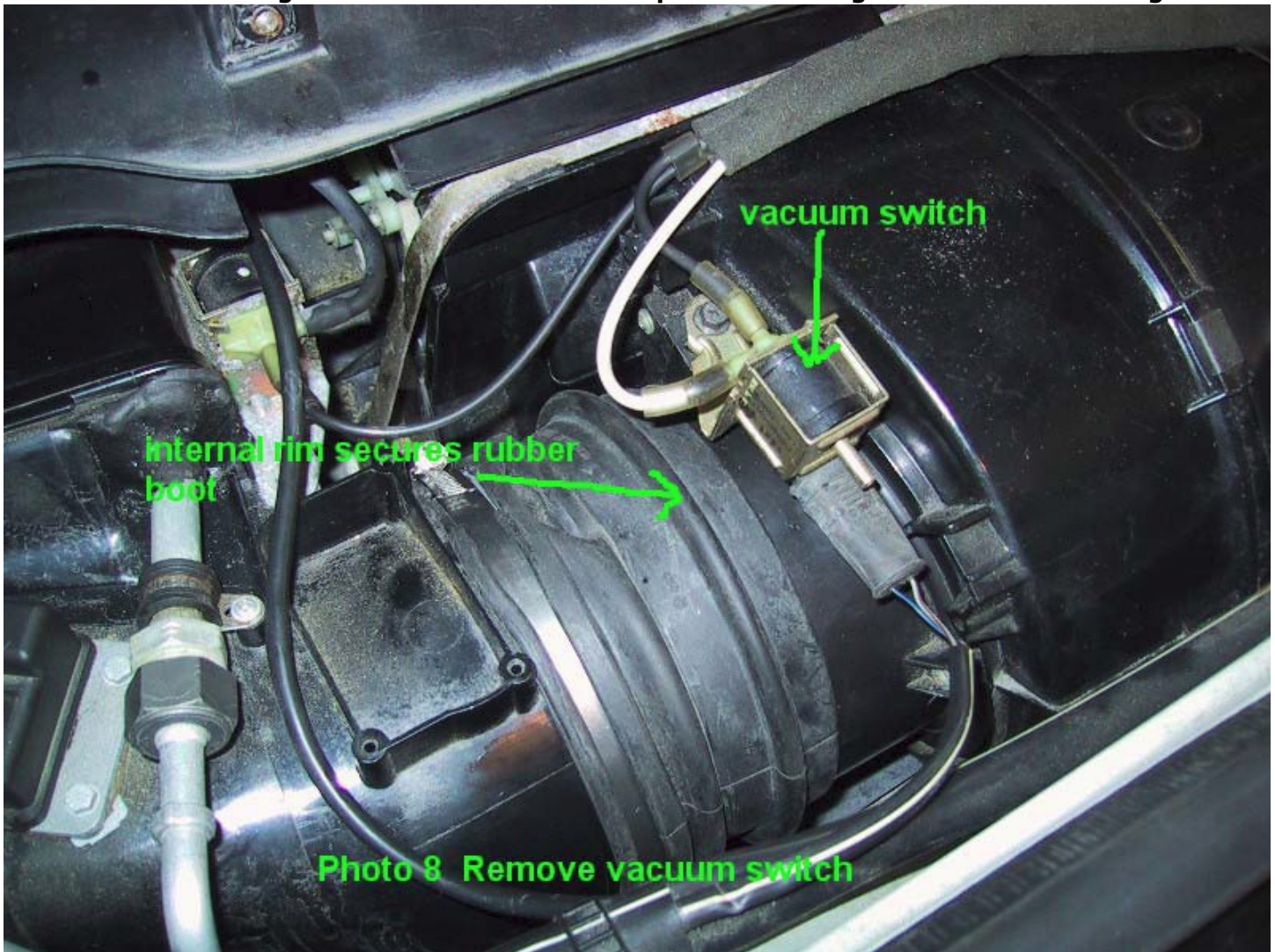


9. **Pinch and disconnect your hoses NOW.** Kinder is talking about pinching hoses 8 and 12 and disconnecting 8 and 11 from the two heater core nipples.



POS	PART NUMBER	NAME	REMARKS	QTY	MODEL
		(flange > heat exchanger)		lhd	ADR
9	4A2 819 371 H	water hose (flange > heater valve)	feed	1	5 cylinder
(9)	4A2 819 371 L	water hose (flange > heater valve)	feed	1	4 cylinder
10	4A2 819 371 J	water hose (heater valve > heat exchanger)	feed	1	
(10)	4A2 819 371 P	water hose (flange > heat exchanger)	feed	1	4 cylinder: ADR
11	4A1 819 373 F	water hose (heater valve > heat exchanger)	return	1	
12	4A0 819 373 C	water hose (heater valve > water pipe)	return	1	5 cylinder
(12)	4A1 819 373 C	water hose (heater valve > water pipe)	return	1	4 cylinder
(12)	4A1 819 373 L	water hose (heat exchanger > water pipe)	return	1	4 cylinder: ADR
13	4A0 819 497	t-piece		1	
14	025 906 041 A	temperature sensor	2 pin blue 20MM	1	
15	+ N 903 168 02	round seal	19,6X3,6	1	
16	032 121 142	retaining spring		1	
17	4A0 819 809	heater valve		1	
(17)	893 819 809	heater valve		1	
18	4A2 819 699	double grommet		1	

10. Remove the big hose that connects the evaporator housing to the blower housing



As Fred M. said "Remove the rubber boot connecting the heater box to the AC evaporator box. Remove the large hose clamp to release the evaporator side of the boot. A rim cast into end of the plastic box extension holds the heater box side of the boot. You can't slide the boot off; you have to lift it up to clear the rim before it slides off (see Photo 8)." Kinderutz also said "no need to try and move the yellow flap, the box will clear it." He must have got lucky, we'll come back to that one. (Note: The UrS4s do not have the yellow flap so that is a non-issue).

11. **Move to the interior of the UrS:** At this point kinderutz said, "I think you're done under the hood (this should take you about 10 min), move inside." He must have a magic watch or something because it took more like 30 minutes to get this far for us (Sean, Goran and Dave)
12. **Remove the Glove Box:** Open the glove box. Locate 2 nuts above and 2 bolts on the bottom and take them off (10 mm). Follow the glove box cable towards the right side and disconnect it. Kinder says "BAM! Glove box is out." (Don't let it fall on your head). Place the glove box somewhere safe, keep the nuts and bolts with it.
13. **Remove the big elbow on right side:** Pull on the big elbow that sits near the center console (on its right side) and take it off. Now you've exposed an 8mm bolt that holds the lower duct (footwell duct). Take off bolt and remove the duct.



Photo 5 Remove bolt to release passenger foot well heat duct from heater box

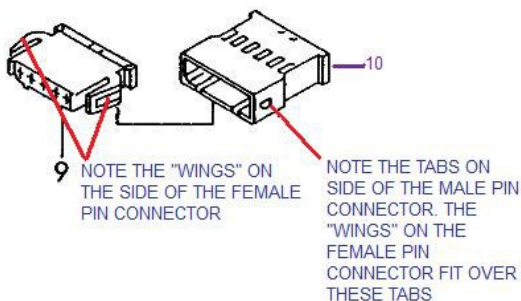
14. **Remove duct with white sock (maybe):** Kinderutz said "remove the upper duct as well (the one with a white sock on it....cut the zip ties and pull)." Sean did that but later said "Why did I do that? It wasn't connected to the heater box anymore". I would leave that duct in place.
15. **Now comes the most critical time saving point of kinderutz's instructions:** "Remember where that big elbow came from? Stick your hand in there behind the radio and locate a blue connector - disconnect it. Now stick it further and you'll feel a red one (it really feels like a red one, LOL). Disconnect it." If you can do this, you avoid removing the console like some instructions and even the less severe step of just removing the radio and reaching into disconnect the red and blue connectors.

This warrants a bit more info to help you disconnect those two connectors and avoid the console removal.

Here are the blue and red connector pairs that you are going after, in this case, exposed after removing the consoles (you really don't want to go there, big time eater when the only issue is disconnecting the blue and red connector pairs in the photo):



Here are some details regarding the tabs and wings on the connectors that you need to work with:



9	893 971 635	flat contact housing	5 pin black 000 979 133 000 979 133 A 000 979 135 000 979 225 000 979 225 A
	(IF YOU HAD TO REPLACE A CONNECTOR, THEY WOULD COME GENERIC BLACK)	for single wiring:	
10	4B0 971 995	male blade terminal housing	5 pin black 000 979 134 000 979 134 A 000 979 226 000 979 226 A
		for single wiring:	

Sean had a seal removal tool, like a heavy duty dental pick, and was able to reach in from the side and pull the wings on the blue female pin connector off the tabs on the blue male pin connector. And then, likewise, with the red connector pair. Otherwise, you could use your fingers to accomplish this. ***IF*** you can't do it, Plan B is to leave them until you start pulling the heater box out, just an inch or so to give your hands more room. Plan C would be to remove the radio and reach in and disconnect the blue and red connector pairs. If you can't do that, Plan D is removing the consoles. There are instructions on how to remove them but I don't even want to provide the links here because the point of this write-up is to avoid the console removal period.

16. **Move to driver's side.** Remove the 2 screws (Phillips) securing the trim plate that holds up the front drivers foot well heat duct (see Photo 6).



17. **Pull down on the carpeted kick panel** on the front console (there is a clip) to give you access to what is behind there.
18. **Like the right side, remove the big elbow.** Then remove the 8mm bolt and remove the lower duct. (Fred M's Photo 7 on the next page)



Photo 7 Remove bolt to release driver foot well heat duct from heater box

19. **Disconnect corrugated rubber boot:** Under the center console you'll see a large corrugated rubber boot that connects the rear floor ducts to the heater box. Use a pair of needle nose pliers and pull the ears of the boot off the duct (one in pass side, one in driver's side). This is impossible to photograph with the console on the car. Here is a photo of this boot taken after the heater box is removed, just so you can see what kinderutz is talking about:



20. **Move out of the interior and go back to the engine bay again.** Kinderutz said: "**Sitting** on the driver's side, grab the box by the blower's side (pass side) and pull slowly. The box seal will give and the box will come loose. Pull it out." That might be true if you are lucky or you are working on an UrS4. If you are working on an UrS6, that yellow flap mentioned earlier will likely be sticking into the heater fan discharge duct and cause you some grief. At Goran's suggestion, Sean disconnected and removed the flap control motor and, after noting the position of the yellow flap, moved the flap out of the way of the heater box.

More about this needed:

On the next page there are photos of the UrS6 and UrS4 A/C evaporator housing showing the flap motor on the UrS6 housing and no flap motor on the UrS4 housing. The first photo shows the UrS6 (and C4 A6) flap motor box (labelled "Mystery Box" in the photo because this was on my 98 C4 A6 avant but not on my 93 UrS4), sitting on top of the A/C evaporator housing. I posted up about the "Mystery Box" and found out it was the flap control motor (not on the UrS4). To remove the flap motor so the flap can be moved, you first remove the two screws on the cover, as shown. Underneath, there are four Phillips-head self-tappers that you remove. Mark the position of the yellow flap. Then pull the flap motor straight up and off the flap and set aside. Turn the flap so it is inside the A/C evaporator housing. Don't lose the six screws.

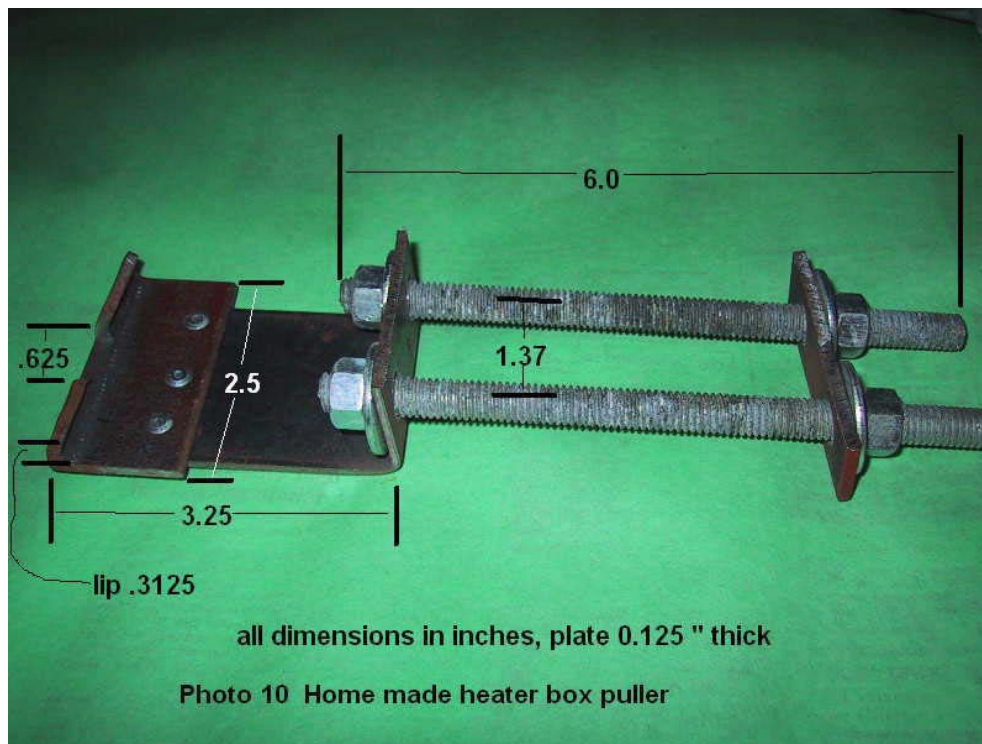
UrS6 evaporator Housing and flap motor “Mystery” box



Here is the UrS4 equivalent (no motor = no flap = no problem) ;>)



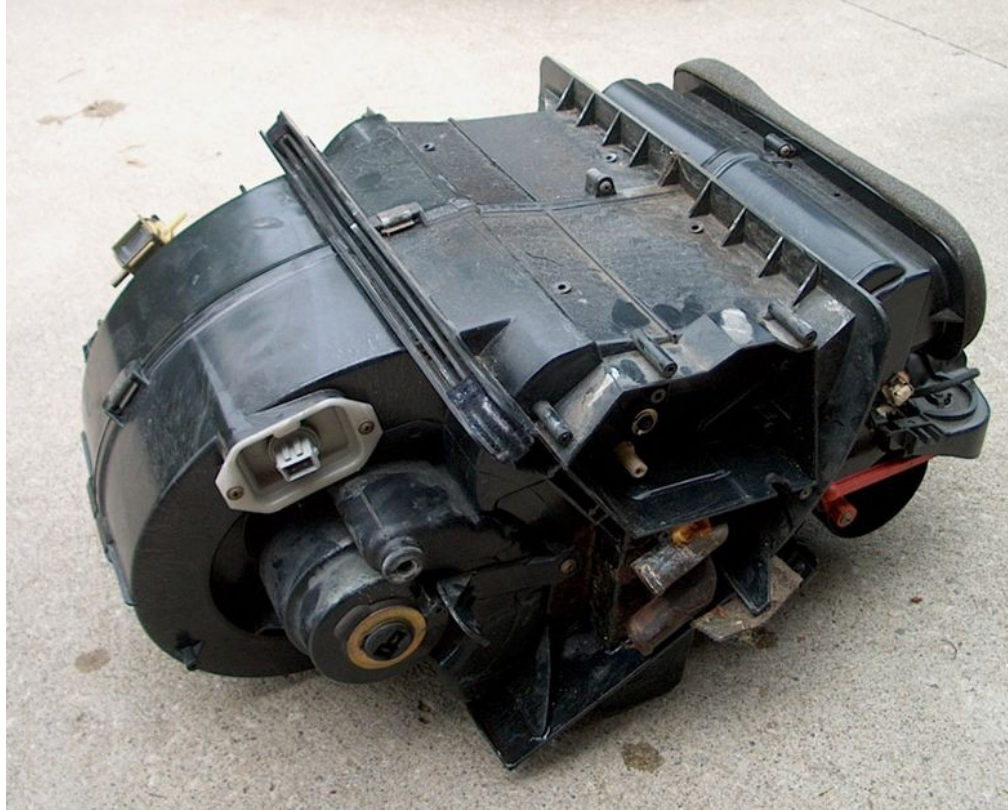
So with the flap out of the way on UrS6 (or no flap on the UrS4), you can gently pull the heater box out, as kinderutz suggested. Fred M made a tool to grab the front edge of the heater box and allowed him to pry the box out slowly, using this tool, a length of 2 x 4 wood and a crowbar or similar pry bar, as shown below. Audiheel has used a loop of polytwine over the heater box and 2 x 4s for prying to accomplish the same thing. Fred M's heater box lifting tool:



Fred M's heater box lifting tool, the 2 x 4 and the pry bar in action:



21. **Place heater box on a safe working surface.** You should now have the heater box out and a big hole from the engine bay to the interior of the car. Here is the heater box from the front left side (Photo courtesy of WikiHow):



Here is the heater box from the interior, left side, showing the red and blue flap motor connections and the heater valve and the bleeder valve still attached to the heater core (note improvised safe working surface):



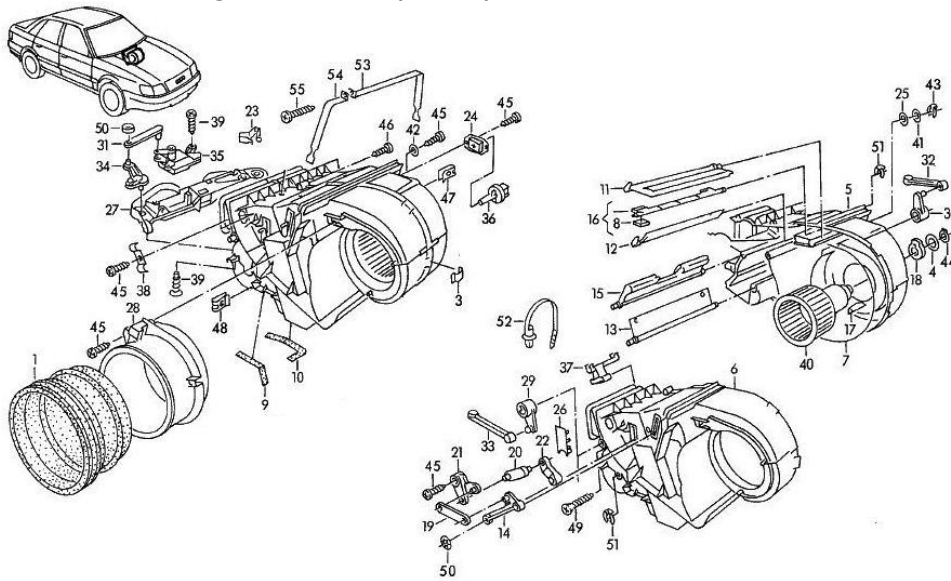
Here is the opening that is left after you've removed the heater box. Note the residual gasket bits left around the opening where the heater box was located. This should be removed before a new gasket is installed (more later). Note you can just see the yellow flap tucked back into the round black evaporator box opening on the left:



By the way, Kinderutz says "Up to this point (box out) it took me 30 min.". I say, "Wow" (He is good!!)

22. Now you have three or four main tasks ahead before you can reinstall the heater box with the new heater core (and probably new fan). These include disassembly of the heater box, removal of the old heater core and fan and installation of the new heater core and fan, cleaning up around the firewall hole and application of the new gasket.

There are numerous clips, screws and lock-rings to be removed before you can separate the two halves of the heater box. Here is a diagram of this next challenge (be patient and methodical, take photos and make notes, as needed). Sean D. says be very careful when removing the screws when separating the box, the little tabs around the edges break very easily.



Kinderutz said "I used a nice 3/4" impact driver (Makita) to take off the 8 and 10mm bolts/nuts." That would speed up the process. Sean made due with hand tools and the LONG Phillips screw driver as noted at the beginning of this procedure.

Note: Item 27 in the diagram above, the bracket that holds the red and blue connectors and the fresh air and temperature control flap motors, comes off as a unit (see photo below).

Anytime you remove a control arm from a flap, mark the position of the control arm and the flap before you disassemble. This will help with reassembly. Try not to move any of the flaps.

The following show the results of the disassembly.

Here is the Item 27 bracket with the V70 Fresh Air Control and V68 Temperature Control motors and their colour-keyed control arms:



Base photo courtesy of Mark A. (aka TheFeck)

Audipete suggested that he would add a recommendation that the red and blue servo motors either be replaced or taken apart and cleaned and greased before you reassemble. Kinderutz, the miracle man ;) said that servos can be replaced later if needed: "No need to remove the console...just pull the glove box, driver's kick panel, elbow ducts, lower ducts, radio and it comes out...takes a bit of playing with it but it comes out nonetheless...here's proof" (see photo below). We mere mortals might want to at least consider Audipete's suggestion.



Photo courtesy of Kinderutz.

Here is the right side of the disassembled heater box, showing the flaps that a) you don't want to move and b) will have "fun" getting their pins back into the left side of the box:



Photo courtesy of Mark A. (Thefeek).

Bill M. suggested that now was the time to clean the flaps (he said his heater box flaps smelled and suggested using SimpleGreen(tm) or the like to clean them). All I say is make sure that you note positions of the flaps before you do any movement or cleaning of the flaps.

Here is the left side of the disassembled heater box showing the heater core and the blower (Note: The box in the back ground has the PN 4A0959101A = new blower fan on it)



Photos courtesy of Mark A. (Thefeek)

The next photo, taken during Sean D's (quattro20V's) heater core R&R, shows the old heater core (with cracked nipples) and the sealant that needs to be cut away in order to be able pull the heater core out of the back of the left side of the heater box:



Once you have the heater core out, and the old sealant removed you are almost ready for reassembly. The only question is whether you are going to install a new blower fan, PN 4A0959101A, that you purchased at dealership (because you know some of the aftermarket versions are crap and this job is way too much work to go back and replace a dead aftermarket blower in six months). Fred M did a great job explaining the details of swapping out an old blower and installing a new one in his post: [Fred M's HVAC Heater blower R&R DIY](#) – except in our case we have the heater box all the way out of the car so at this point the blower swap is even easier than Fred's description.

In his DIY post Kinderutz says at this point "...make sure you seal the pipes area with silicone, make sure all your flaps move free and are in place" ..."When the box is ready to go in, use a line of silicone where the box seal came off, a line of silicone on the box itself, back in the hole with it, install the box strap and tighten it, connect your rubber lower boot (needle nose pliers + ears), connect your big elbows, connect pass side upper duct(white sock one) (if you removed it), lower duct(8mm bolt), stick your hand behind the radio and connect the red and blue connectors, reconnect glove box light, reinstall glove box. Driver's side, reconnect rubber boot to the rear vents(the one with the needle nose pliers and ears), reconnect lower duct (8mm bolt), reinstall big elbow, reinstall kick panel and/or lower plastic cover for the kick panel. Go outside the car and reconnect the heater hoses, vacuum line to the valve and re-secure the solenoid with the Philips screw, add coolant, open the bleeder port, run engine, set blower on medium, temp on HIGH, select center vents....observe for leaks, none visible, proceed to reinstall wipers, cowl cover, etc. I like to readapt the flap motors so i run basic settings, channel "00", while the flaps are

adapting, I check my coolant, close the bleeding port, etc. Enjoy the heat in 2.5hrs or less.....YES WE CAN !"

Back tracking a bit, here is the right side of the heater box with the flaps still in their same position, and with the new heater core installed, waiting for the left side of the heater box to be slipped over the top and the sealant applied around the exposed heater core pipes.



Photo courtesy of Mark A. (Thefeek)

Three final notes that I will add:

1. When installing the new heater core, warm the RTV sealant in a hot water bath, and when you have the box back together, holding the new core in place, put the box on its side, core nipples up and flow the warm RTV around that end of the core, sealing it to the heater box.
2. Before you put the heater box back in, vacuum up all the much and leaves, etc. and remove the residual old gasket using a plastic scraper and solvent, etc. to get rid of the old foam (tedious but worth it). Sean opted for the proper OE foam gasket, PN 431819225, which comes as a single piece 1360 mm long. He opted to attach the foam to the heater box instead of the car and trimmed it so there was neither too little or too much where the ends of the gasket met. See photo below.
3. As you put the heater box back in, you might want to pause say 1 or 2 inches from "home" and go inside and connect the red and blue flap motor electrical connectors.

Here is the factory heater box seal PN with the seal in the bag:



Thanks to all those who contributed directly or indirectly: Kinderutz, Gabriel C. (Iskolnick), Sean D., Goran D., Fred M., ThetaTau87 (Brad) , Austinado16, Mark A. (Thefeek), AudiHeel, Audipete and Bill M.

Dave F. (UrS4boy) with *obviously* too much time on his hands, March 2013. ;>)