Upgrading 93 Bonneville ECC System To 95+ ECC System
And Changing the Air Mix Actuator

The intention of this tech article is to provide step-by-step instructions for swapping the ECC head unit and HVAC programmer, and changing the Air Mix Actuator. I'll give you the steps in the order I think is proper, and also I'll provide some hints and tips that might speed up the process and make it a little less painful. To do this, I'll list the steps in order first – 1, 2, 3, etc. Afterward I'll list any tips, pics, or things to watch for. I'll do this by prefacing the tip with a "T", followed by the step number it relates to. T5, for instance, would be some sort of note or comment relating to step 5 of the instructions. I decided to do it this way so you can quickly run through the steps and not have to dig the instructions out of an ocean of text (and believe me, I put an ocean of text in here!). I'll start easy (changing the ECC head unit), proceed to the more difficult HVAC programmer swap, and end with the wretched Air Mix Actuator replacement. I think a fairly competent backyard mechanic can do the entire project in 3 hours or less (I still discourage you from planning a hot date for the same evening unless you have a backup ride). Good luck – it's really not that bad!

A word of **CAUTION**:
You will be working around the passenger SIR (airbag). Prior to starting this project, it might be a good idea to disable the airbag by pulling the fuse and breaking a connection in the yellow airbag wires. Disconnecting the battery, as an added precaution, is also a good idea.

Liability Statement:
Perform this task at your own risk! Neither the author nor anyone associated with this article accept ANY liability if you damage your car, hurt yourself, or otherwise screw something up. This is a guideline designed to help you perform the tasks described herein, therefore the risk is yours and so is the responsibility.

Application Note:
The following procedures were performed on a 93 Bonneville SSE. They should, however, be applicable to all 92-99 models with slight modification. Some peripheral components, such as the ECM for instance, may be in a different location. In cases such as this, disregard steps that recommend removing the ECM for better access, for example. The basic steps should otherwise be applicable.

Skill Level Required ~ **3 – 3.5**
On a scale of 1 to 5 where
1 = What's a wrench?
1.5 = I've *seen* a wrench before.
2 = Got me some tools!
2.5 = Got me some tools, and I know how ta use 'em.
3 = Decent mechanic, but some things scare me.
3.5 = Good mechanic – ain't skeert.
4 = Highly skilled in the mechanical arts.
4.5 = Mechanical wizard.
5 = Automotive god…don't try this at home.

Tools Needed –
7mm open end wrench
7mm deep socket or socket driver
Long, slim common screwdriver
Small common “techie” screwdriver (like you’d use working on your PC)
Small flashlight
Paper clip
Needle nose pliers*
Soldering iron, solder, heat-shrink tubing or electrical tape*
Five 1 ft lengths of wire*
Wire strippers*
Patience
Small bag of cuss words (I used a large bag, but hopefully these instructions will reduce your need)
*optional tools

ECC Head Unit Replacement -

1. Remove the lower instrument panel trim.
2. Disconnect the gain control connector, if so equipped.
3. Find a safe place to stash the panel trim.
4. Remove four 7mm screws holding the ECC head unit in place.
5. Slide ECC head unit out and remove electrical connector.
6. Stash the old ECC head unit in a safe place.
7. Remove the purple/white wire from pin slot 2, splice it to the grey wire, and install it in pin slot 10.
8. Connect the electrical connector to the new ECC head unit.
9. Slide the new ECC head unit into the slot.
10. Install the four 7mm screws.
11. Fetch the lower instrument panel trim and slide it into place.
12. Connect the gain control connector, if equipped.
13. Position the lower instrument panel trim in place and push it into the retainers.

HVAC Programmer Replacement –

14. Prepare to crawl around under the dash on the passenger side.
15. Remove the hush panel and stash it in a safe place.
16. Locate the HVAC programmer.
17. Remove the vacuum lines.
18. Remove the main wire bus.
19. Remove the two 7mm screws.
20. Work programmer loose and move it until you see the air mix actuator connector.
21. Disconnect air mix actuator connector.
22. Pull HVAC programmer out from under dash.
23. Stash HVAC programmer with old ECC head unit.
24. Optional – Splice 1ft lengths of wire into air mix actuator wires.
25. Slide new HVAC programmer loosely into position under dash.
26. Connect air mix actuator connector to air mix actuator.
27. Move HVAC programmer into its installed position.
28. Install two 7mm screws.

29. Install main wire bus connector.
30. Connect vacuum lines.
31. Install hush panel.
32. Start car and enjoy telling it where to blow air.

Air Mix Actuator Replacement –

33. Remove glovebox.
34. Disconnect Air Mix Actuator control arm from Air Mix Door.
35. Remove the HVAC programmer (Steps 14-22 above. Recommend doing step 24 as well.)
36. Remove the ECM.
37. Remove two 7mm screws holding heater core cover on.
38. Remove heater core cover.
39. Remove and replace Air Mix Actuator.
40. Install heater core cover and screws.
41. Connect Air Mix Actuator control arm to Air Mix Door.
42. Install ECM.
43. Install HVAC programmer (steps 25-31 above).
44. Calibrate Air Mix system.
45. Install glove box.
46. Acquire large hammer, seize old Air Mix Actuator, and pummel soundly. You've earned it.

T1. There are 7 spade-type press-in tabs that hold the lower instrument panel trim in place – no screws. The trim piece extends over the steering column and surrounds the HUD dimmer (if you have one), it's all one piece. Use your fingers, not a screwdriver, to pull in the areas of the yellow dots in pictures 1 & 2. Those are the locations of the spade tabs. It might help if you start in the area near the steering column.

T2. Once the trim panel is free of the dash, you can pull it out a few inches and remove the connector on the back of the slide switch for the gain control. All the electrical connectors have some sort of plastic keeper on them to prevent them from being inadvertently pulled out. This one is no exception. I used a needle-nose pliers to squeeze the keeper and pull the connector out. That was easier than trying to squeeze and pull with my fingers.

T3. I found it easier to completely remove the lower instrument panel trim if you tilt the steering wheel to its lowest position. This will give you a little more clearance to pull the panel out. Work it a little and it should come out with very little force. Put it in your trunk or someplace it won't get broken.

T4. Pretty straight forward (picture 3). You'll be removing a few 7mm screws, so keep a 7mm socket and wrench handy. You'll need a deep-walled socket to pull the vacuum lines off the HVAC controller, so be ready for that. I used a Craftsman 7mm "screwdriver socket" which happens to have a hollow shaft. It worked great on all the screws I could access with it.

T5. The ECC head should slide out very easily and there should be plenty of wire length to pull the unit out far enough to disconnect the wire. You'll need to squeeze the keeper (easily seen on the top of the connector, picture 4) and work the plug side-to-side to get the keeper tab to clear the unit. It takes a little doing, but it will come out.

T6. Put this ECC head away. You won't need it anymore. The panels on the 93 and 95 ECC heads have different buttons, so there's no chance you can confuse them.

T7. This is the most difficult part of swapping the ECC head. The purple/white wire in slot 2 (picture 4) of the 93 connector is the VF DIM INPUT and comes from the radio (assuming stock radio, here). On a 95 this same signal is on a yellow wire connected to slot 10 and comes from the interior light system. This is the signal that dims the green display when you turn your lights on. It's not imperative that you change this wire location and source, but if you don't your ECC display with be blazing bright at night. I tried just moving the pin from slot 2 to slot 10, but that doesn't work. You'd think it would, but my experience says no. Unless you have spare connector you can cannibalize from like I did, you'll need to cut the purple/white wire about 4 inches or so from the connector, move it to slot 10, and splice it into the grey wire going into slot 1. To remove the pin, pull the keeper off the back of the connector by using your techie screwdriver to push in and back (simultaneously) on one of the tabs of the orange keeper (picture 5). Do the same thing on the other tab of the keeper and it should pop off. Then, using a paper clip, push the pin through from the front, see picture 6. There's a springy little tab on the pin that holds it in place, the paper clip is used to depress this tab so the pin will come out. A little tug on the wire and the pin should come right out. You may need to push the pin toward the front of the connector before you insert the paper clip. If you try to pull it out and insert the paper clip at the same time you will bind the springy tab against the connector and it won't move. Shove the pin into slot 10, reconnect the keeper, splice the wire, and you're done. I used one of those solderless wire splices and it was very easy. I'm not real impressed with the function of the display dimmer – seems to be real touchy – but then I think the rheostat on my headlight switch is sketchy. Yours might work fine. Mine seems to be either real bright, or off. I have to search for a "sweet spot" when dimming my dash lights to dim the ECC display properly.

T8. The connector should go on fairly easily. Make sure you push it in far enough for the keeper to snap into place.

T9. The new ECC head will slide into place easily. If you feel like you have to force it, something's wrong.

T10. Straightforward.

T11. All you're going to do here is position the trim panel over the steering column – don't press it into place yet. You still need to install the wires to the gain controller, if you have one.

T12. Push the electrical connector for the gain controller into place. No need for pliers or anything, it should just push right on. If you don't have a gain controller, skip this step.

T13. Line the trim panel up and press in the areas of the yellow dots in pictures 1 & 2. You'll have to use prudent force to install this panel, but you shouldn't have to put your feet on the panel and kick it into place. Make sure everything's lined up properly before you take a hammer to the dash. Once you've popped this into place, you're done with the ECC head. Not bad, eh?

T14. I put this step in here because there are a few things you may want to consider doing. They're not necessary, but if I were going to do this again, I'd do them. First of all, you're going to be upside down and on your back reaching around under the dash. Pull your floor mat out and vacuum the carpet in the passenger area. You'd be surprised how irritating a bb-sized pebble on the back of your head is! Get the

area clean and you'll be much happier. You may also be kneeling on the ground and reaching under the dash. Use your floor mat as a pad to kneel on. If I ever do this again, I will also remove the passenger seat. I did it with the seat installed and just reclined the seatback, but I'm old enough that laying off the front of the seat really bothered my back. You'll be doing a lot of this and it will be much more comfortable with the seat out. Especially if you're a big guy, which I'm not. It's your call, but I highly recommend it. [Note: After changing the HVAC controller I came back later and changed the Air Mix Actuator. This time I removed the passenger seat and have since concluded that this is a "must do". It was so much more comfortable! I also recommend a thick blanket or some sort of pad to prevent the seat studs from stabbing you mercilessly. I purposely didn't provide instructions on pulling the seat (involves 5 phillips screws, 4 nuts, and 1 seatbelt bolt). This is a test. If you can't figure out how to get the seat out you probably shouldn't be rooting around under the dash.] I'll mention some tools you'll need in addition to the 7mm deep socket and 7mm wrench. A long (maybe 1 ft) slim common (flat blade) screwdriver will come in handy, as will a mini-maglite. It's tight under there and a small flashlight is easier to handle than a big one.

T15. The hush panel is that black plastic cover under the passenger dash that your passengers can kick. There are two 7mm screws attaching it just under the dash, and two wingnut style fasteners holding it to the firewall. Remove these screws and nuts and the panel will come right out. Put it in the trunk. Now might be a good time to disable the airbags, if you're so inclined. Pull out the fuse and break the connections in the bright yellow wire harnesses under there.

T16. The HVAC programmer is the first box to the right of the big heater core cover which is attached to the firewall. You should already have a new HVAC programmer, so look under the dash for a box that looks like that one. There will be a connector on the lower left side of the programmer that has 5 vacuum lines coming out of it. They might look like colored wires. They're not. Those are the vacuum lines, and they are attached to the HVAC programmer. See picture 7. Picture 7 is what you'd see if you were laying on your stomach and looking up under the dash. The left of the picture is toward the driver's side of the car.

T17. Once you've located the vacuum lines, you'll need to disconnect them. I tried to leave them on. My intention was to pull the programmer out enough to pull the cover off it and disconnect the vacuum lines at the vacuum pots. Pht. Yeah, right. Not gonna happen, dude. Turns out the vacuum lines are easy enough to disconnect at the programmer anyway. Grab your 7mm deep socket and remove the nut on the long stud in the center of the vacuum connector. The connector won't just pop off, it needs some coaxing. But don't go open a can of spinach on it, you'll probably wind up damaging something. Find the techie screwdriver and carefully push the tip against the side of the connector (which is a flexible plastic), and slowly pry it off. Tug slightly on the vacuum lines while you do this and work your way around the connector with the screwdriver. You don't want to dig the tip in too deeply because you don't want to tear or puncture the connector. This connector is probably under a little vacuum, it's been on there for years, and there's a bit of an interference fit. This connector actually comes off the 93 easier than the 95 because, as it turns out, the 93 has rigid nipples on the programmer side of the connector, while the 95 has flexible nipples. Assuming you procured a used programmer which will have the vacuum connector on it, and knowing that hard nipples are better than soft, I suggest swapping the 95 nipples with the 93 nipples. More on this later.

T18. The main bus to the HVAC controller is near the bottom of the controller toward the dash and is pretty easy to get to. It's an orange connector with a blue keeper and a bunch of wires coming out of it, and it's connected to your programmer (naturally). Stick your head under there, you can't miss it.

T19. There are only 2 screws holding the programmer in place. The one at the bottom is real easy to get to, and you can use a socket on it. The other one, however, is another story. It's located about halfway up the programmer, toward the dash. You can see that bad boy in picture 8. The vacuum lines and main bus are disconnected in the picture and the programmer is just about ready to come out. You can get the open end of a 7mm wrench on this screw, get about a 1/16 turn, flip the wrench over, get another 1/16…by the time you get it out you'll swear that ¾ inch screw is 6 inches long. But it will come out. Eventually. (Wait till you go to put it back in!). Note that you could pull the screws out before you remove the electrical connector and vacuum lines. That's what I did. But I wound up putting the lower screw back in to hold the programmer rigid while I yanked the bus connector out. That way you only need ONE hand up in there.

T20. To get the programmer loose, you need to push it toward the dash (to the aft of the car) first. I didn't know this until I installed the new programmer, but there are two tabs on the programmer that fit into slots on the heater core cover. Picture 9 shows the hole left when the programmer is removed. You can see these slots, and you can also see a part of the air mix actuator. You have to push the programmer toward the dash in order for the tabs to clear the slots. The programmer will now be free. Once it's free, push it toward the firewall and grab your mini maglite. Don't try to yank it out just yet.

T21. Look straight up the hole that the programmer just made between itself and the dash, and you will get a glimpse of five small wires and a connector. All you'll see of the connector is the clip that holds it in place. I couldn't get a good picture of this with the connector in place, so you'll have to trust me, but picture 9 shows you where the connection is made. This is the connector that provides the control signals to the wretched air mix actuator. You can actually see part of the actuator. Unless your name is Skeletor, you probably won't be able to get your hand up there and remove the connector. I could reach it, but I couldn't position my hand such that I could remove the clip and pull the connector off. This is where that long common screwdriver comes into play. The connector installs from the top, i.e. you push down on it to connect it, so all you need to do is slide the blade of the screwdriver under the connector clip and push up (picture 13 shows the screwdriver tip under the clip, ready to push up). Your HVAC programmer is now completely disconnected and ready to drop out. I'm getting goosebumps just thinking about it.

T22. The programmer should now just slide right out. You may have to move some wire bundles out of the way, but there shouldn't be anything else holding it back. No contortions needed, you can pull it straight out.

T23. Your old programmer will look identical to your new one. Make sure you don't mix them up and reinstall the old one! I'll take this opportunity to briefly explain the process of swapping vacuum nipples, if you're inclined to do so. There are some threads on the Bonneville Club website concerning "collapsed nipples". I assume these refer to the vacuum nipples on the HVAC programmer. This would not apply to the 93, however because they are made of rigid plastic whereas the 95 is a flexible plastic. [I've since read comments that GM put some lubricant on the nipples that tends to soften them over time. I can nether confirm nor deny the accuracy of this statement. All I can say is that mine were original and were rigid while the ones from the newer car were flexible (and not deteriorated).] In picture 10, the 93 connector is on the left. In addition to rigid plastic, the 93 has a nut holding the stud in place and the 95 doesn't. I'm sure there's a valid reason for the difference – maybe the flexible ones seal better. I swapped these because I felt one of the lines from the connector to the vacuum pot was somewhat restricted on the 95 unit, and I wanted to avoid the collapsed nipple syndrome. To swap the nipples, you need to open up your programmers. Not too difficult. You have to work the clip up holding the nipple connector in place, then work up 4 clips holding the lid in place (picture 11). Takes a little concentration, but you can do it. Once the lid is off, the

vacuum connector at the vacuum pots pops right off. Picture 11 shows you what's inside the programmer. Install the 93 vacuum assembly in the 95 programmer. Snap the lid and the vacuum connector in place simultaneously, and you're done. If you don't feel comfortable about pulling the lid off your programmer, you don't have to swap these nipples. Whether you do or don't, take this opportunity to put a very thin coat of silicone dielectric grease on each nipple. You can use your techie screwdriver to do this. Try not to get any over the holes, and use as little as possible but wipe it all the way around the nipple. This is especially important if you use the 95 nipples. If you do this the connector that's still in the car will slide nice & easy onto this connector. If you don't do this I don't know how you'll get the vacuum lines back on. Silicone spray lube may work for this too, I just happened to have dielectric grease handy. And it's easier to do this before you install the programmer under the dash.

T24. I listed this as optional. I tried to connect the air mix actuator leads without doing this mod and I couldn't do it. I probably just ran out of patience. So I cut, soldered, then shrink wrapped a foot of wire into each lead (picture 12). You could probably use crimp-on connectors too. Either way, it was sooo much easier to snap that connector in place that I highly recommend you do this. Dress it up real nice with some zip ties and you'll be glad you did it. Since I used slightly heavier wire, I also drilled a hole on a flange of the programmer body and zip tied the wires to it. I did this to provide a little strain relief where the wires enter the programmer. I don't want those wires bouncing around under there and eventually breaking. Now you can connect the air mix actuator wires and slip the programmer into place.

T25. Get the programmer in position to slide into place. That is, get all the other wire bundles out of the way and hold the programmer up enough so the air mix actuator connector can reach.

T26. There's now plenty of room to reach up there and install that connector. You'll smile at how easy that was.

T27. The programmer will now slide up into place fairly easily. This is when I noticed the tabs on the programmer body that need to slip into the slots on the heater core cover. It's very difficult to see the upper one, and I never did get that bad boy into place. The lower one's not too bad and I think it holds in there just fine with one tab in place. But if you have the patience to work the upper one in, do it.

T28. You're practically there! Hold the programmer into position over the lower screw hole and install the screw, but don't cinch it down yet. You want to leave enough play so you can install the upper screw. Ahh, the upper screw. You will now come to the realization that this is the screw that was forged in the depths of Mordor. Once you get it started, it's not too bad – just the 1/16 turn reverse of removal. Getting it started is frustrating. It will taunt you mercilessly because you can see it so plainly, but you can't get your hand up in there to start it. I finally managed to set it in place with needle nose pliers then push on the head while trying to turn it with a 7mm open end wrench. I'm not quite sure how I got it in there, it was all such a blur. About 37 minutes after you get it started, you'll cinch it up. Now you can cinch the lower one too.

T29. Install the main HVAC bus connector now, before you install the vacuum lines. You have just a little more room to push it in place if you do. Make sure it's completely seated and snap the keeper in place.

T30. You're ready to install the vacuum lines. Slip the connector over the nipples and start the nut onto the stud. Now use the techie screwdriver to push between the nipples to force the connector all the way home. Just tightening the nut won't do this, it needs a little help. Again, be careful you don't tear or damage the

connector. Once you're convinced the connector is well seated, tighten the nut. It just needs to be snug, no need to go Schwarzenegger on it.

T31. No secrets to installing the hush panel. Just install the screws and the stamped wing nuts. If you pulled the passenger seat, go ahead and install that to. Did you remember to reconnect the air bag harnesses and activate the SIR system? Remove the hush panel and repeat step T31 until you can answer "Yes" to the last question.

T32. You did it! You're such a stud. Go out in the front yard and roar like a lion, then hop in the car and tell it you want air coming out the vents. No, make that coming out the bottom. No, wait, you want it to come out both! Your wish is it's command!

Air Mix Actuator:

T33. There are several small screws holding the glove box (the actual *box*) in place, they're all quite visible. Remove these and carefully work the box out. You may have to lift up on the little flap that the lower screws go through, and when the box is about ½ way out you'll need to tilt the front down so the air vent opening will clear. You may want to remove the glove box door too. It turns out that the upper screw of the heater core cover is quite visible through the glove box opening and removing the door allows you to sit in front of the glove box opening and reach under the dash with a 7mm socket driver to install the screw *and* see what you're doing at the same time. If you have long arms you can probably leave the door on.

T34. That long screwdriver comes into play here. Stick it through the hole in the dash air bag bracket, place the blade between the control arm (looks like a threaded rod) and the Air Mix Door arm, and pry the control arm up. It should pop right out of the plastic door arm. I forgot to take a picture of this so I pirated one from the Bonneville Club site. It's actually a picture of a temporary work around for a defunct motor and shows a coat hanger in place of the control arm, but the shot gives you an idea of where to look. See Picture 18.

T35. Refer to T14-T22.

T36. While this step may not be absolutely necessary, I removed the ECM to get just a bit more room to work. It's easy enough to do – just pull the 10mm nut off the bracket at the bottom of the ECM. Comes out without too much stress. Make sure you note how it's placed up in there before you yank it out. I didn't even disconnect any of the wires, it sits happily on the floor out of the way. You may, however, need to disconnect a couple airbag leads (if you haven't already). These are the 2 yellow wire harnesses in that area and they were in the way of removing the heater core cover, so I unplugged them and pushed them out of the way.

T37. There are only 2 screws holding the heater core cover on. One is easily visible near the lower "aftward" corner of the cover. The other one is above it near the Air Mix Actuator. I discovered later in the process that this upper screw can be seen through the glove box opening if you look right below the airbag bracket (picture 17). Not such a big deal when removing the screw, but rather handy when you're reinstalling it. Once you pull these two screws, you're ready for the biggest pain of the whole ordeal.

T38. Removing the heater core cover is, frankly, a pain in the arse. What makes this more difficult than it should be is a long plastic bracket that lives on the firewall side of the hole vacated by the HVAC controller. I didn't get a good picture of this bracket, but you can see it in picture 9 at the bottom center of the photo –

that little tab with the hole in it is part of the bracket. This bracket holds some sort of module (which I have no idea what it is). I couldn't see any easy way to remove this bracket. The bracket really gets tweaked to the right side of the car during removal and installation of the heater core cover. I completely removed the heater core cover but, in retrospect, I think you could probably save yourself considerable grief by leaving the cover under the dash and removing the Air Mix Actuator. After you pull the screws and do some jiggling on the cover, it'll drop easily about 3-4". You won't be able to see the two screws holding the Air Mix Actuator in place, but with a ¼ drive ratchet and socket you should be able to remove the screws by feel. There's actually plenty of room to do this, the trick will be installing the screws on the new actuator because you'll be doing it blind. If I had to do this over, I'd at least give this method a try. [UPDATE: BC members have confirmed that loosening the heater core cover is sufficient and complete removal of the heater core cover is an unnecessary step of self-inflicted stress!] If you're hell-bent on pulling that whole dang thing outta there like I was, or if you can't get those screws back in, then read on. You'll want to pull as much of the carpet out of the way as possible. If you're really ambitious, pull the pad out too (I was too lazy to do that). This will give you a few more centimeters to work with. I have no tips for getting this cover out painlessly, other than to tell you that the lower forward corner of the cover will give you grief as it hits on the firewall, preventing the cover from just dropping out. Keep telling yourself this is much, much better than yanking the dash off. Keep working at it, it'll come eventually. Picture 15 shows the heater core cover pulled out from under the dash.

T39. There are a couple 7mm screws holding the actuator in place. Again, I strongly urge you to try to do this with the core cover pulled as low as it will comfortably go. Pull these screws, pull off the actuator, stick the new one in place, and install the screws. This part is so easy you'll probably cry. I opened up my defunct actuator to see what went wrong. The failure mode is quite evident in picture 16. It's hard to see in the picture, but that split in the large gear goes through more than 75% of the gear. Almost split in half.

T40. If you're an imbecile like me and pulled the heater core cover completely out, or you just couldn't get those screws back in with the cover still under the dash, gird up your loins and break out your favorite bag of cuss words 'cause you're gonna need 'em. There just is no easy way to get the cover back up in there. You'll have to work at it, but it will eventually go back with a reasonable amount of force and cussing. I still contend this is easier than the alternative (pulling the dash apart). Sorry, but I have no hints here. Be persistent, patient, and work it back in there – it'll go. And you'll see what I mean about that bracket I mentioned before. One thing to be aware of is the actuator control arm. That thing flops around all over the place and you want to make sure it doesn't get into a position that requires pulling the cover loose again to reposition it. Every now and then reach up there and make sure it's where it needs to be. Once you get the heater core cover in place and you're sure the actuator control arm is where it needs to be, line the cover up over the heater core and install the lower screw. The hard part is over and you can start thinking about celebrating. The upper screw location can be seen through the glove box opening and you can look through there while reaching under the dash with the screw stuck in the end of a 7mm socket driver with a little grease. See picture 17 (you can see the socket driver through the gap). Piece of cake.

T41. Now's a good time to connect the Air Mix Actuator control arm to the Air Mix Door. I was a stooge and did this after I'd already installed the ECM and HVAC controller. I had to use 2 flat screwdrivers to snap the rod onto the door arm – one underneath the door arm to prevent breaking it and one on top to push the rod into place. I think, without the HVAC programmer and ECM in place, you might be able to reach up in there and push down on the rod while you hold the arm with a screwdriver. The other way is a minor pain to get everything lined up in there but I doubt you'll be inventing cuss words because of it. You may not be

able to reach up there far enough not to use the 2 screwdriver method, but it's worth a try. Try to connect the door arm within ¼ inch of the end of the rod.

T42. The ECM is pretty easy to install. Stick it back up in there the way it came out, stick the clamp over the bottom, and install the 10mm nut.

T43. Refer to T25-31. Adding the extra length of wire is highly recommended. I'd already done this and it made removing and installing the HVAC controller so dang easy. I even managed to get the upper tab of the HVAC controller in place this time. Woohoo! The screw from Hell was no easier to install, though.

T44. Everything should be connected electrically and mechanically now. It's time to calibrate the Air Mix Door. To do this, start the car and crank the heat up to max (90º). When the door arm has finished moving to the right as far as it's going to go, use the long screwdriver to pop the rod off. Using the screwdriver, try to push the door arm as far right as you can. Reinstall the rod with the door in this position. Calibration is done.

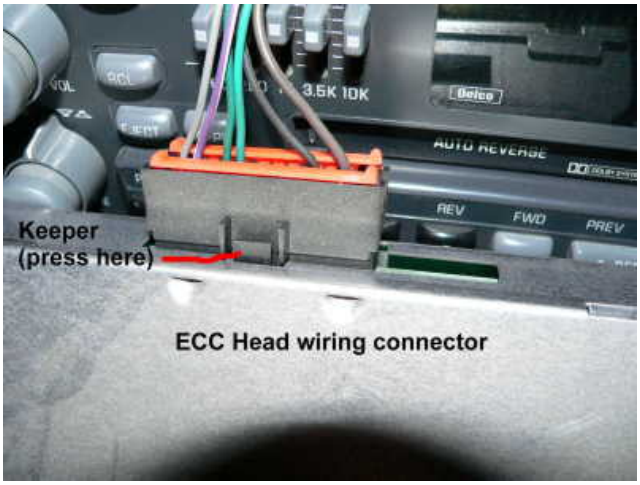
T45. Install the glove box and anything else you removed or disconnected.

T46. That stupid little motor was the cause of a lot of grief on your part. It might do your soul some good to beat the tar out of it.

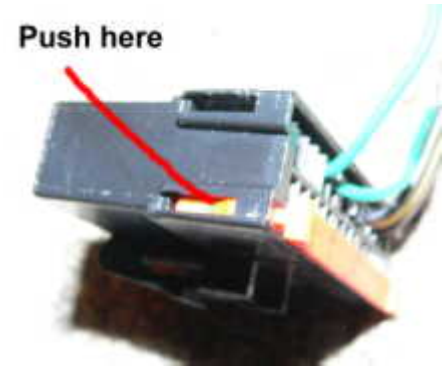
Picture 1

Picture 2

Picture 3



Picture 4



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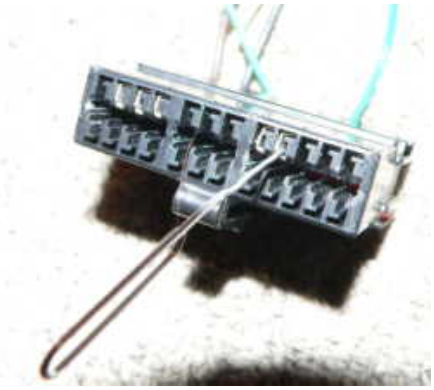

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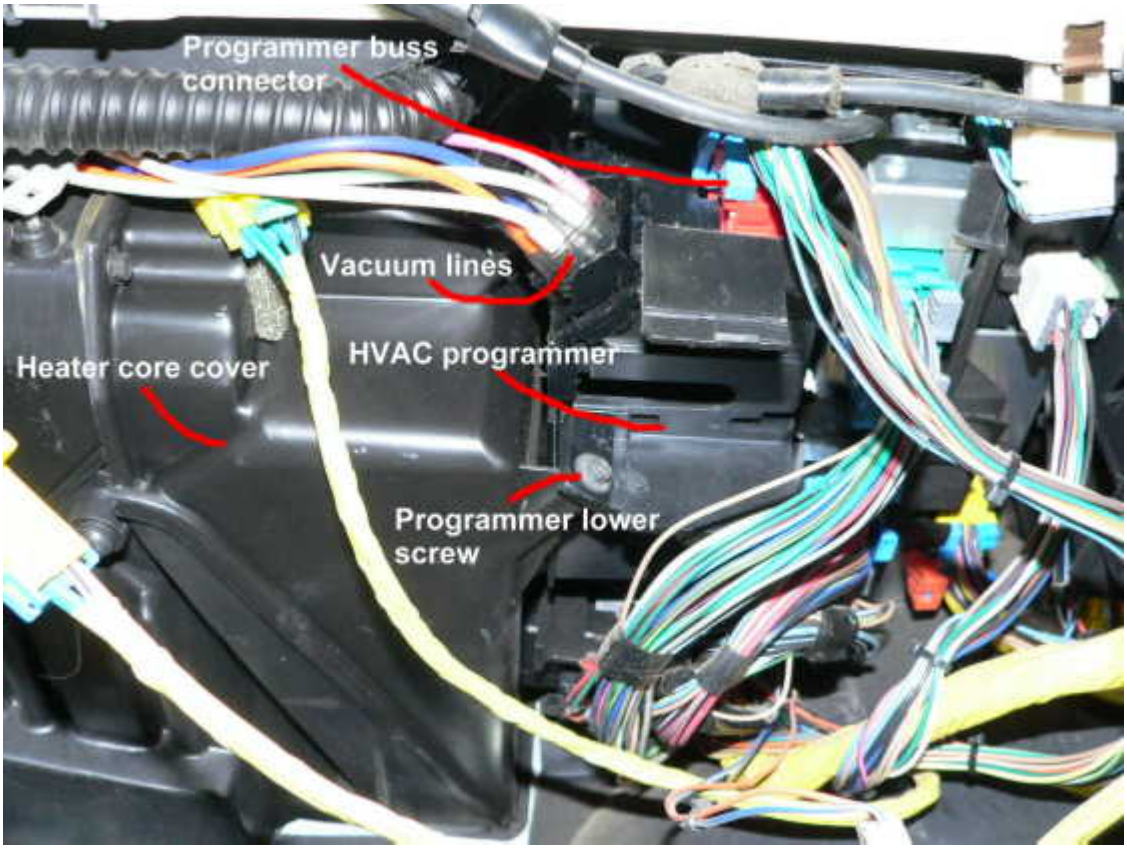
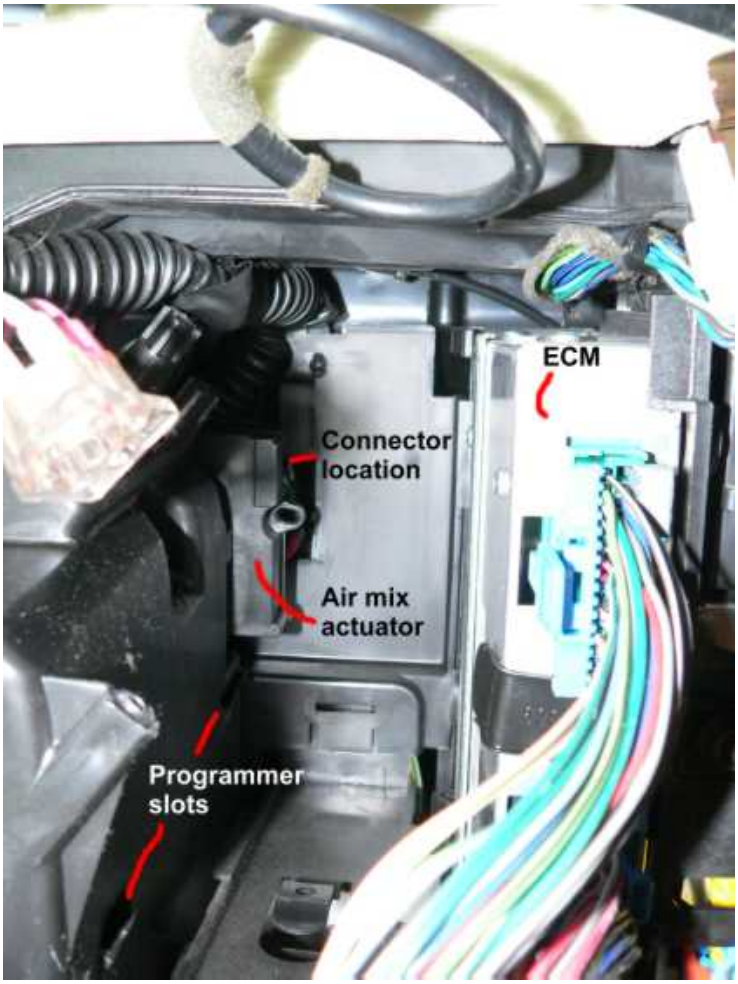


Picture 7

Picture 8



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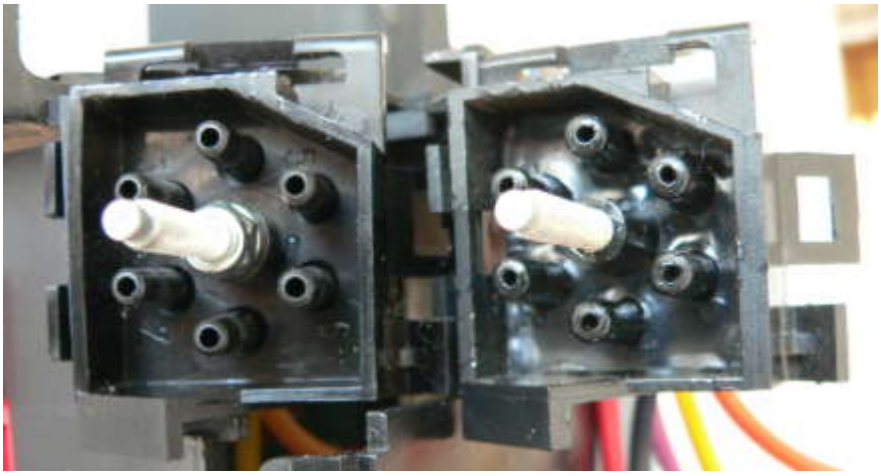
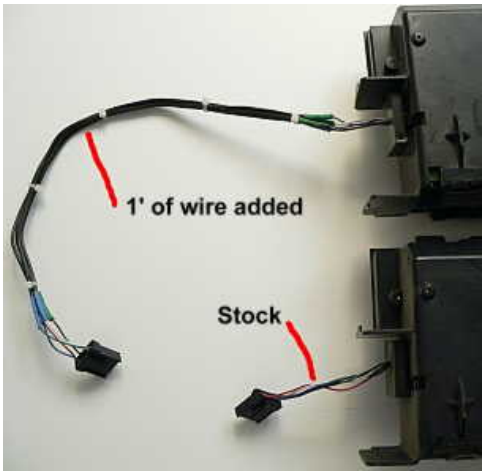

Picture 10

Picture 11



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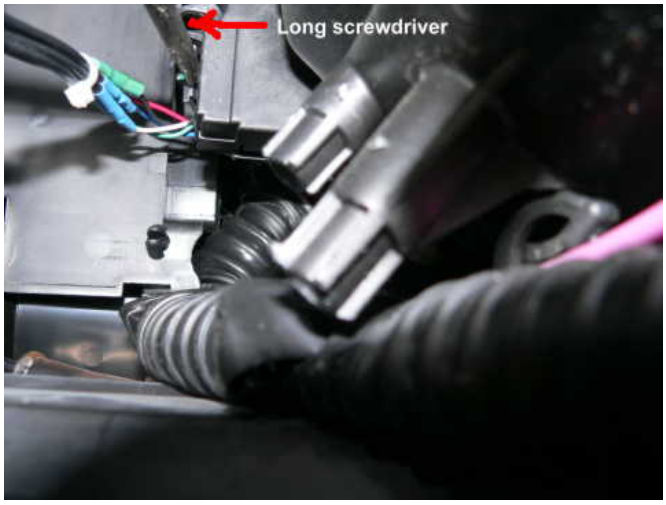
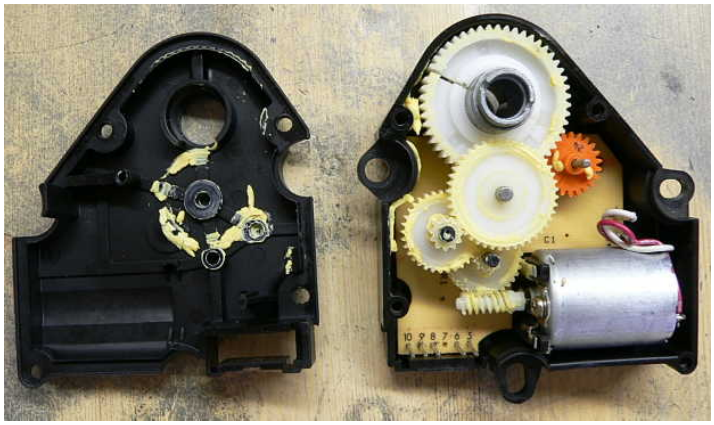


Picture 13

Picture 15



Picture 16

Picture 17

Picture 18