LaSpaziale VII 2008 Firmware Upgrade Manual

How to Swap out the Controller Board and Program the New Features

Draft Version, June 19, 2008

Instructions to Remove/Replace the VII Controller Board

(Do this list in reverse to replace the board)

Tools required: Large Phillips screwdriver, medium Phillips screwdriver, and 13mm open end wrench (not all will need this wrench).

Move whatever you need to in order to have complete access to the front, back, and right side of the machine (facing it from the front).

- Note your current temperature offset. Write it down so you can restore it later. Instructions can be found here: http://www.s1cafe.com/s1v2/images/S1V2OffsetInstructions.pdf
- Unplug the VII.
- Turn off the water to the VII.
- Open the steam valve with the steam arm pointed into a suitable container until the pressure dissipates (unless it is already completely cool).
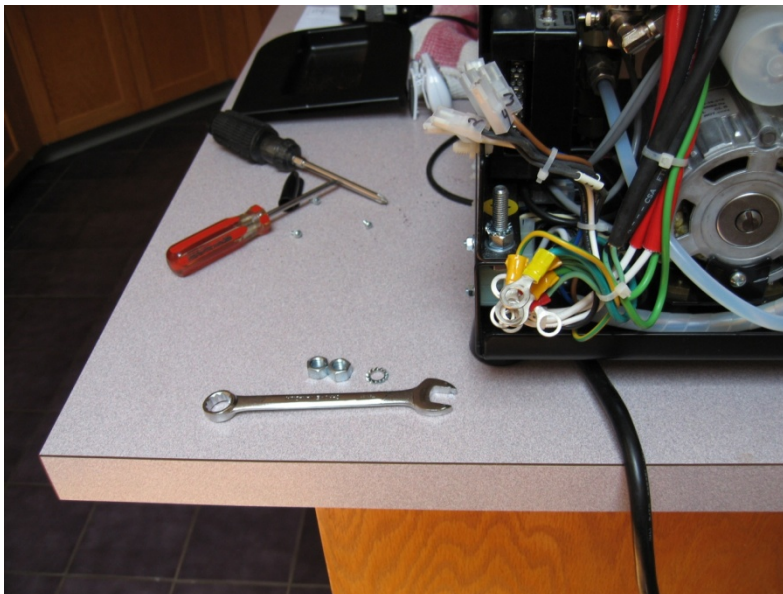
NOTE: If you've never removed the covers from your VII you should reference the following web page, which has labeled photos showing the locations of the various covers, panels, and screws noted below: http://www.s1cafe.com/s1v1/S1Photos.php. Study this web page. It might be good to print it out and have it on hand as you proceed with the following instructions.

- Take out the drip tray
- Remove the plastic "fence" from the edge of the cup warmer so it doesn't fall and break during the next step. Remove the screw from the front edge of the metal cup warmer.   Pull up to remove it.
- Remove the two screws holding on the front panel and remove the panel.
- Remove the Rear cover. There are two screws on top to remove and two screws on the bottom that just need to be loosened.
- Remove the three black knurled knobs that hold on the right side panel. Loosen the two screws on the bottom. Remove the panel. You can leave the left side panel in place.
- Facing the rear of the VII unplug the seven individual wires down the back side of the controller box, labeling each as you go. As you can see in the next photo, each one has been numbered with a Sharpie.

NOTE: Don't be concerned if the wire colors in your machine don't match those in the photo. The wire colors seem to vary from lot to lot.
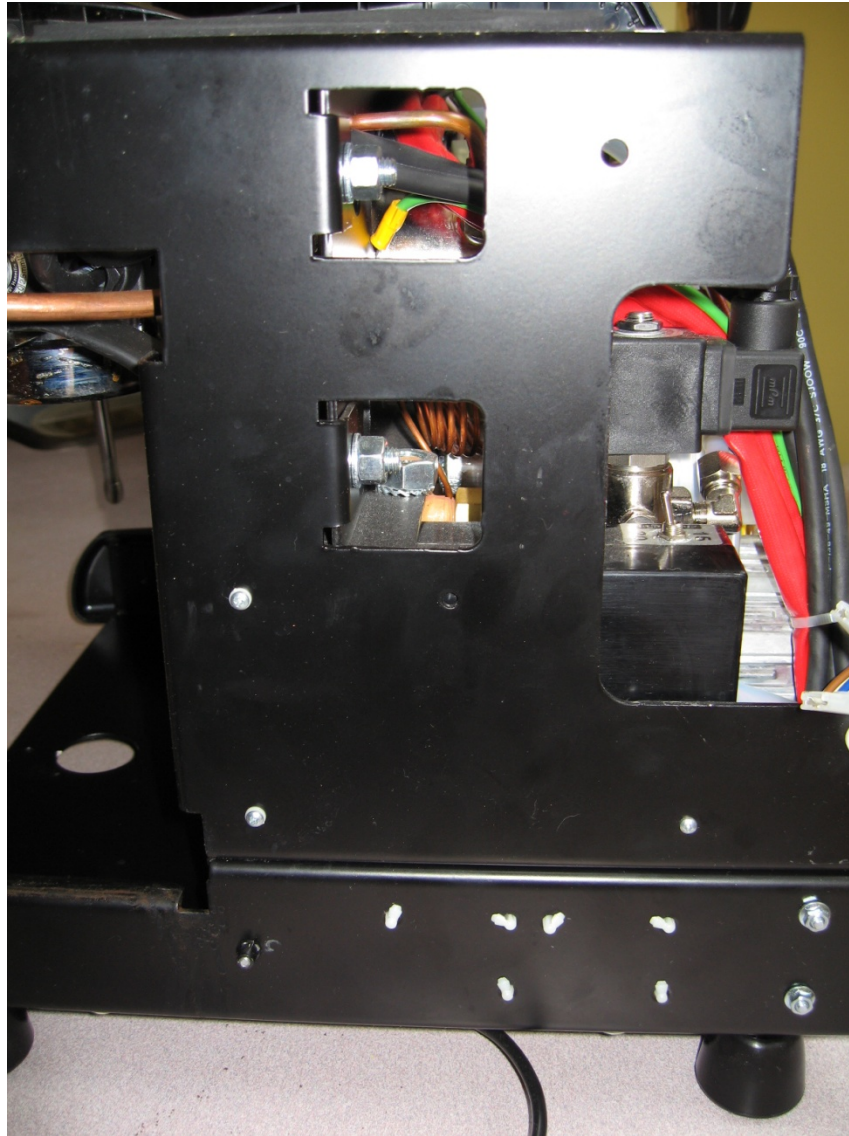
- The instructions from Chris Coffee recommend removing the bolt stack and ground wires in the lower left corner. This requires a 13mm wrench. After doing this it was noted that the controller box could have been removed without this step since there was enough room to angle it up and over this bolt. Your mileage may vary depending on how your machine is built. Since these are hand built machines every one is a little different.
- If your machine's layout is such that you can't angle the controller box over this bolt, you will need to remove the 3rd and final 13mm nut shown in the photo below and drop this bolt down until the controller box can clear it.
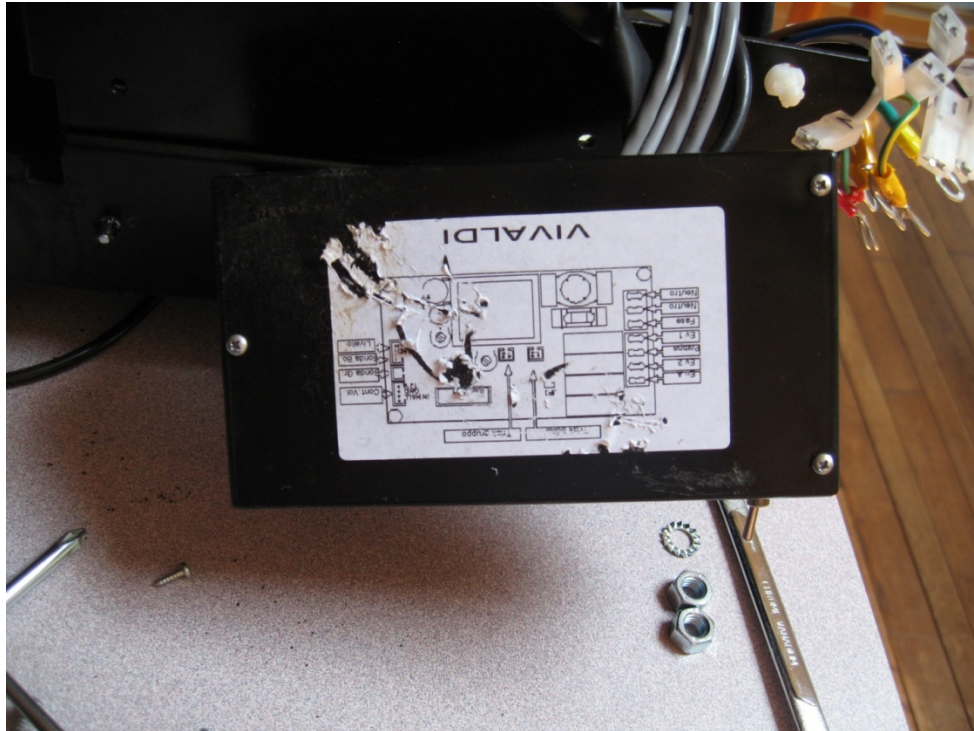
- The next step requires that you unscrew the three silver Phillips screws holding the black plastic controller box to the right side of the chassis.

- With these three screws removed, face the side panel shown above. Use your left hand to push on the controller box from the front while you angle the box up and over the ground bolt with your right hand.
- With the controller box pulled out the back of the machine, it will look like the next photo.

- Now you can see that there are another 8 cables passing through a slot in the side of the case that need to be dealt with. Remove the three screws shown in the above photo and pull the cover off the controller box.

- You can't see it clearly in this photo but each cable has a white silk screened label on the PC board. You should write this label's name on a piece of tape and place the labeled tape around each cable.
- Early purchasers of the VII will have a board and case like the one above. It lacks a second switch which is set to whether the programmable timer option is installed or not. The switch in the above photo is the 15A/20A selector. Controllers with a timer switch will have another wire that connects right above the 15A/20A connector. For those without a timer switch a jumper is used. Jumper ON = Timer installed. Jumper OFF = No Timer.
- Once all the cables are labeled and removed, unscrew the four Phillip screws that hold the controller board in the black box.
- Now remove the controller board and ship it to Chris Coffee service while following any other instructions you may have received from them.
- Don't forget to order a pressure regulator with pressure gauge if you don't already have one. Have Chris Coffee ship these back with your upgraded board. They'll need to know whether you currently have 3/8" or ¼" John Guest tubing so they can send the regulator with the proper connectors.
- While the board is away being programmed, this would be a good time to visually inspect the insides of your machine for anything that looks amiss or for anything loose that may need to be tightened. A good clean up may be in order depending on the age of your machine. Use a can of pressured air (without the skinny red tube) to blast out all the dust and mini-debris.

When you get the Controller board back from Chris Coffee:

- Installation and reassembly is simply the reverse process of that described above.
- You may want to stop at the step where you have the controller box all wired up and inserted into the machine but before you screw in the three screws that hold it to the right side of the chassis. It's better to do initial testing at this step in case something isn't right rather than wait to find out after you have replaced all the covers and panels.

What to Check on Initial Power Up

It is uncertain whether your controller board will come up in S1 mode or VII mode as the initial default. While plugging in the VII (don't forget to turn the water back on first!), for 1 second you will either see three yellow LEDs flash or three green LEDS flash. If the green ones flash you are good to go. If the yellow ones flash your machine is in S1 mode. It must be reset to VII mode or the programming options that follow will not work.

Changing from S1 to VII Mode

If the three yellow lamps flashed when you plugged in your machine do this step. With the VII in Standby mode (**ON/STBY** blinking green), press and hold the **Hot Water** button for at least 10 seconds. The three green lights will blink once which indicates that your machine is now in VII mode.

If you repeat the process above, the three yellow lights will blink indicating that the machine is back in S1 mode. In other words, each time you hold in the Hot Water button for 10 seconds while in Standby (**ON/STBY** blinking green), the mode toggles.

If in doubt as to which mode you are in, just unplug the VII and then plug back in to see if the three yellow or three green lamps blink once.

VII and VII Mini Temperature Offset Instructions

(**BOLD** = lamps, Reverse = buttons)

What Does Temperature Offset Do? / How Do I Use it?

The Vivaldi group design exhibits a temperature drop between where the group boiler temperature probe is located and where the hot water exits the group. Consequently, the temperature setting shown by the temperature lamps on the front panel may differ from the water temperature at the group. Ideally, most users would prefer that the temperature indicated by the temperate lamps exactly matches the water temperature exiting the group. LaSpaziale has partially accounted for this in its basic design. However, there are too many machine to machine electrical and mechanical variances for this to be completely effective. That's where the temperature offset comes in. The programmable temperature offset allows a user with accurate group temperature measuring equipment to enter an offset in the range of ±8˚C in order to allow their machines temperature lamps to exactly match the water temperature exiting the group. This is a much larger range than should ever be required for this purpose. The extra range can potentially be used for other purposes but any such experimentation is at the imagination and risk of the owner.

Those purchasing new machines from Chris Coffee Service have had the temperature offset professionally programmed used a Scace device. However, for those obtaining the expanded offset capability via an upgrade, it is recommended that you note the current offset prior to upgrading and then duplicate that offset using the instructions below. If you do not know how to tell what your current offset is, the document link in the next paragraph contains that information.

To Which Machines Do These Instructions Apply?

These instructions for the expanded temperature offset capability apply to the latest shipping Vivaldi II and Vivaldi II Minis as well as older ones with upgraded software. If the programming sequences below work as noted, then your machine supports the extended Offset adjustment. However, if pressing the Double Cup or Single Cup buttons don't seem to do anything, try pressing the Boiler button. If on each press of the Boiler button an additional temperature lamp lights, then your machine supports the original Offset adjustment from 0 to -8˚C. Full instructions for adjusting the offset on machines with that older software revision can be found at:

http://www.s1cafe.com/s1v2/images/S1V2OffsetInstructions.pdf

How do I Change the Temperature Offset?

Start with the machine in Standby mode (**ON/STBY** blinking green). Press and hold the **Boiler** button for about 10 seconds until the **Boiler** light and the **ON/STBY** light start flashing. You are now in the temperature offset programming mode.

To enter a positive temperature offset between 0˚C and +8˚C push the **Single Cup** button. Each press will change the offset by +1˚C. An offset of 0˚C is designated by all temperature lamps off. A +8˚C offset is designated by all temperature lamps plus **ECON** on (Low Water on VII Mini). If your positive offset is more than you wish, each press of the **Double Cup** button changes the offset by -1˚C.

To enter a negative temperature offset between 0˚C and -8˚C mode push the **Double Cup** button. Each press will change the offset by -1˚C. An offset of 0˚C is designated by all temperature lamps off. A -8˚C offset is designated by all temperature lamps plus **ECON** on (**Low Water** on VII Mini). If your negative offset is more than you wish, each press of the **Single Cup** button changes the offset by +1˚C.

How Do I Tell If My Current Offset is Negative or Positive?

Example: You enter Offset Programming mode and see that three lamps are on. This can indicate either ±3˚C. Which is it? Since each press of the **Double Cup** button changes the offset by -1˚C, press it and see what happens. You will either end up with two or four lamps lit. If four lamps are now lit you must have been set to -3˚C since pressing **Double Cup** always changes the setting by -1˚C with each press. If two lamps are lit your offset was +3˚C. By pressing **Double Cup** you have changed it to +2˚C.

-8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 ˚C Offset

---→ **Single Cup** Button

←-- **Double Cup** Button

Note that neither the **Single Cup** nor the **Double Cup** button presses wrap around when they reach the limit of their range. Once you get to +8˚C additional presses of the **Single Cup** button do nothing. Same with the **Double Cup** button once -8˚C is reached.

Programmable Preinfusion

With the machine on (**ON/STBY** (22) lit and not blinking), press and hold the **ON/OFF** button(27) for three seconds until the **ON/STBY** (22) and the current preset temperature lamps are both blinking. Then press the **BOILER** button (13) for 3 seconds. The temperature plus **ECON** lamps now display the current time delay between when the group water solenoid opens and when the pump is activation. This is the preinfusion time. If none of the lamps 14-21 are lit, the preinfusion time is 0 seconds which means no preinfusion. Each press of the **BOILER** button (13) increases preinfusion time by 1 second and lights one more lamp up to a maximum of 8 seconds when all of the temperature and **ECON** lamps (14-21) are lit. When preinfusion is set to 8 seconds, another press of the **BOILER** button (13) resets the preinfusion back to 0 seconds.

Once the preinfusion time is set as desired, press the **ON/OFF** button (27) to exit the programmable preinfusion mode.

This feature should be coupled with an external pressure regulator plus a pressure gauge. Chris Coffee recommends an initial setting of 20-25PSI (~1.5bar) of input water pressure and 2-3 seconds of preinfusion time. Other articles on programmable preinfusion suggest a higher input pressure of around 45psi (3 bar). Feel free to experiment with both settings to optimize your espresso experience. However, to quote the Italians "Don't be too American. More is not necessarily better!"