So, You Found a Liquid Cooler

A brief guide to the basics of PC liquid cooling
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Basic Precautions

- Never power on the liquid cooler without coolant in the lines, It can damage the pump.

- Always keep the cooler above the PC or you may get a pocket of air in the components, this is detrimental to both cooling and circulation.

Operation

- The cooler will come on on automatically when the PC is powered on (the cooler is wired directly to the PC case power button)

- The fan and pump speeds can be set with the "set", "up" and "down" buttons. The fan has an automatic mode and 10 manual modes, the pump has only manual modes. In both cases, 10 is the highest operating speed.

Setup and Maintenance

As a general rule, setting up a liquid cooler should be the last step in a PC build. As a consequence of this it is also rather easy to install one on an existing PC. The steps may differ slightly from product to product, so follow the manual for you cooler closely, but I'll list the general steps here along with some maintenance items:

Setup

1. If your coolant hose comes as a single tube, you will need to measure out and cut two lengths to fit from the cooler to the components that require cooling.
2. Thread the hoses into the PC Case before terminating the ends with your available connectors, The connectors are larger than the diameter of the hose and often will not fit back through the case or adapter.
3. Attach the tubing to the component(s) that are to be cooled, The most heat sensitive components being first in the loop.
4. Connect the external portion of the tubing to the cooling unit, Check that the IN and OUT pumping orientation is respected.
5. Connect the power adapter to the PC (ours is wired directly into the PC case power button) then connect the external portion of the adapter to the cooling unit, a VGA cable in our case.
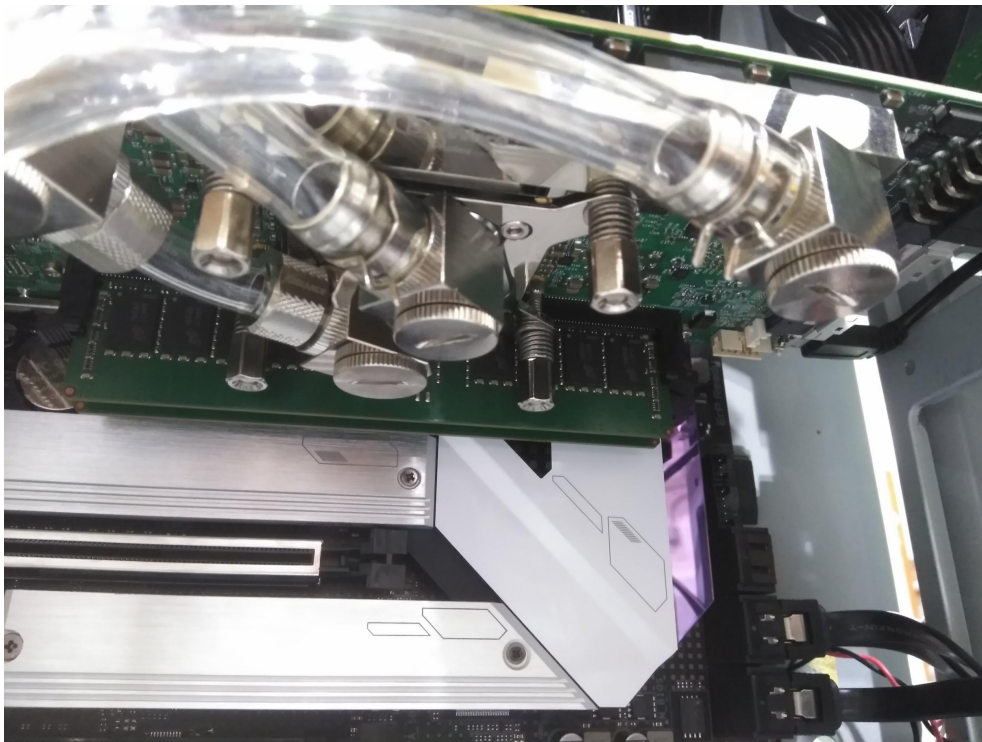

Figure 1: properly terminated connectors attached to the CVP-13

Filling

The following is the procedure for adding coolant to a liquid cooler, It applies generally to most any PC liquid cooling:

1. Carefully inspect all hoses and connections before proceeding.
2. Open the coolant reservoir on the cooling unit.
3. Before adding coolant, make sure that the unit is above the PC
4. Slowly add the coolant and allow it to settle into the lines (to prevent spills, it's convenient to attach a bit of hose to the coolant bottle and thread it into the reservoir, this method also allows you to remove coolant if necessary. see **Figure 2**)
5. Once the coolant has filled the lines and is up to the max fill line in the reservoir, gently tip the PC a few degrees on each axis to help clear bubbles from the components.
6. Power the unit on and repeat the tipping process, adding coolant as needed until there are no longer bubbles coming up through the lines.
7. Recap the reservoir to finish.
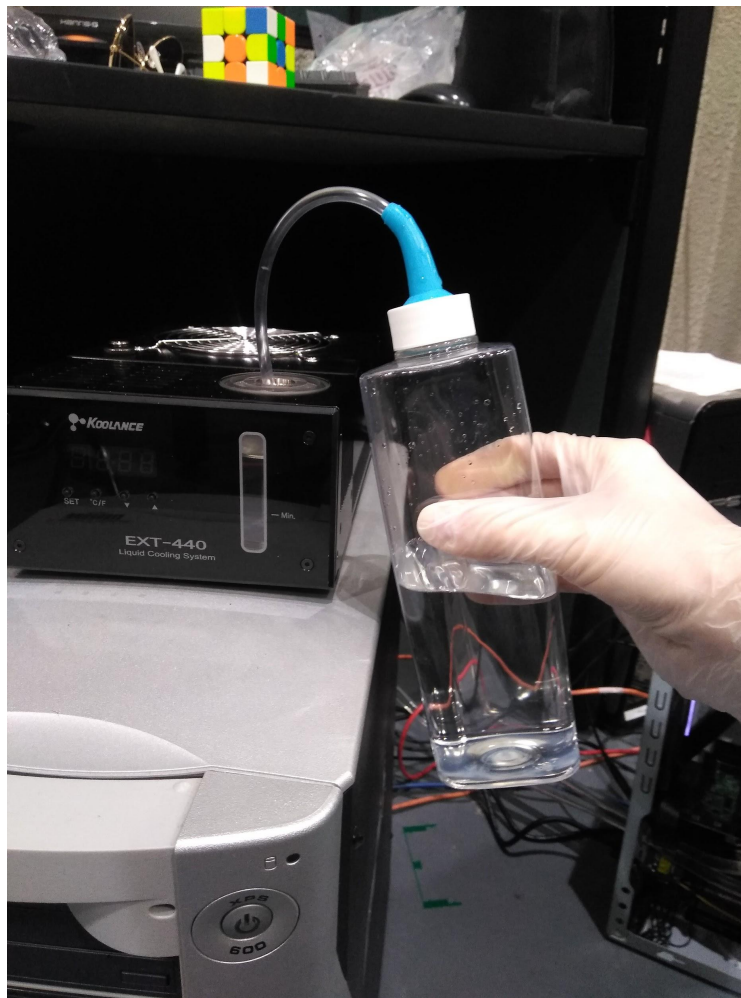
Figure 2: Reservoir filling process

Should this guide leave you with any questions, consult the EXT-440 User's Manual, or contact me directly (jhadley2018@my.fit.edu) , the questions and answers would be useful to put in this document for posterity.