

GEFORCE GARAGE  
SCRATCH BUILD SERIES

## HOW TO PLAN YOUR WATERCOOLING LOOP

FEATURING  
LEE HARRINGTON, [PCJUNKIEMODS](#)



A custom watercooling loop is the kind of mod that can elevate a well-designed rig into a masterpiece. It's the kind of mod that says pro. And it isn't even that difficult to pull off—we've covered some of the [essentials](#) here at GeForce Garage before. You won't be surprised to hear that the surest way to turn a time-consuming, frustrating task into a simple and satisfying one is to go in with a plan.

In this video, Lee Harrington shows you how to plan your own watercooling loop by walking you through the process of how he designed, built, and installed the watercooling system in our Scratch Build.

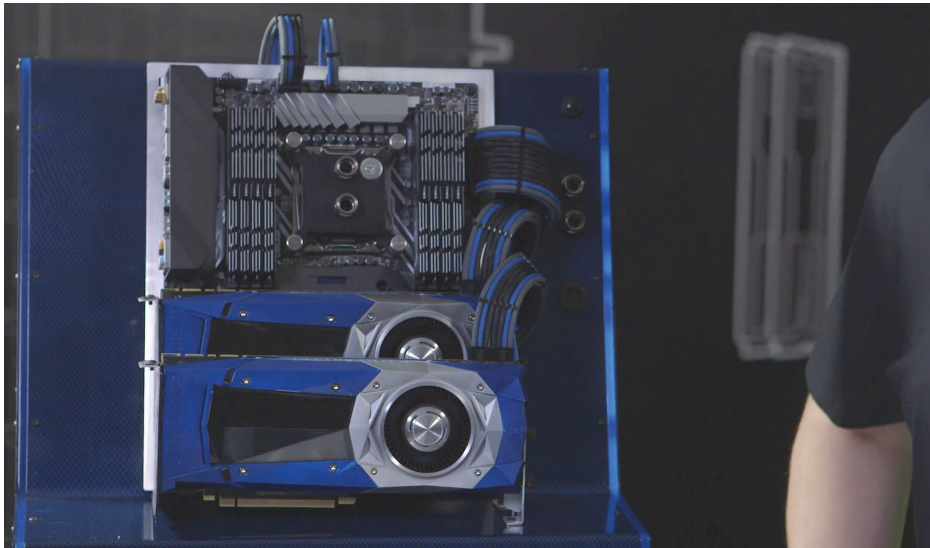
Since custom watercooling means that everyone will be using a different combination of materials and techniques, this video emphasizes how and why he chose the components and design in the build. Lee points out the pros and cons of different approaches, and gives you a heads-up on what to watch out for and what to avoid. And then he wraps with a demo of the acrylic-bending technique he used to create the striking clear blue paths gracing our rig.

In this PDF, you'll find highlights of the watercooling techniques and issues covered in the video. Once you've identified the customizations you want and have drawn up the plan for what they'll look like when you're done, you'll be ready to pull off your own custom watercooling job with confidence.

**LEVEL: MASTER**

**TIME: 3-6 HOURS**

**COST: \$\$\$**



## STEP 1:

### Components to cool

You can buy watercooling blocks for just about every component in your gaming rig: the CPU and GPU, obviously, but blocks are also available for your RAM, SSD, and even motherboard. Keep in mind that for every component you add, however, you'll need a waterblock and two fittings, which increases the overall cost.



## STEP 2:

### Drain and fill ports

These are optional, but if you've got the space for them, fill ports and drain ports with a ball valve make watercooling maintenance far more convenient and less hazardous than watercooling loops without them. When planning your watercooling loop, keep in mind that it's best to locate the fill port near the top of the PC, and the drain port near the bottom whenever possible and let gravity work in your favor.



## STEP 3:

### Tubing and fittings

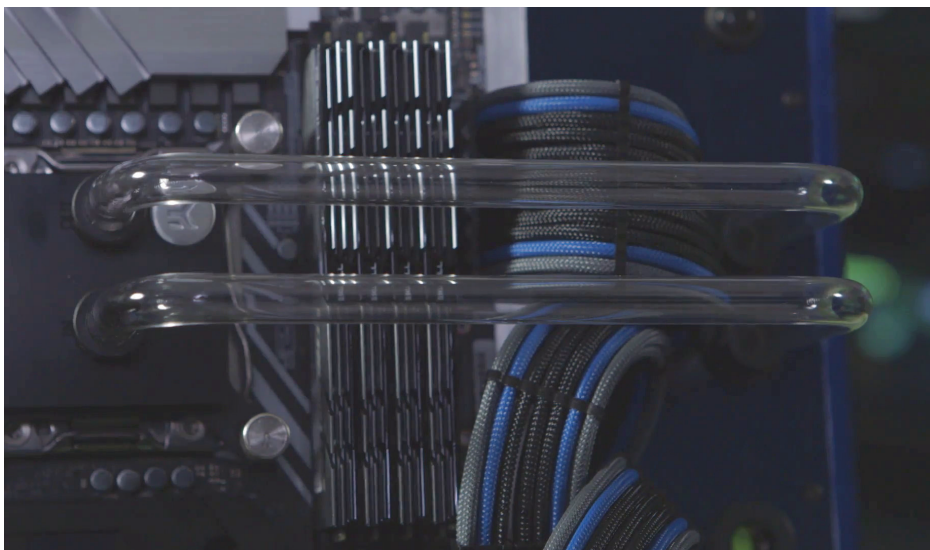
Cosmetically, you have *tons* of options for the the watercooling path in your rig. Once you've decided what kind of cosmetic effect you want from your watercooling path, you'll need to make some decisions about how to implement that path. That's where you'll need to take into account the pros and cons of various materials and techniques.



## STEP 4:

### Flexible vs hardline tubing

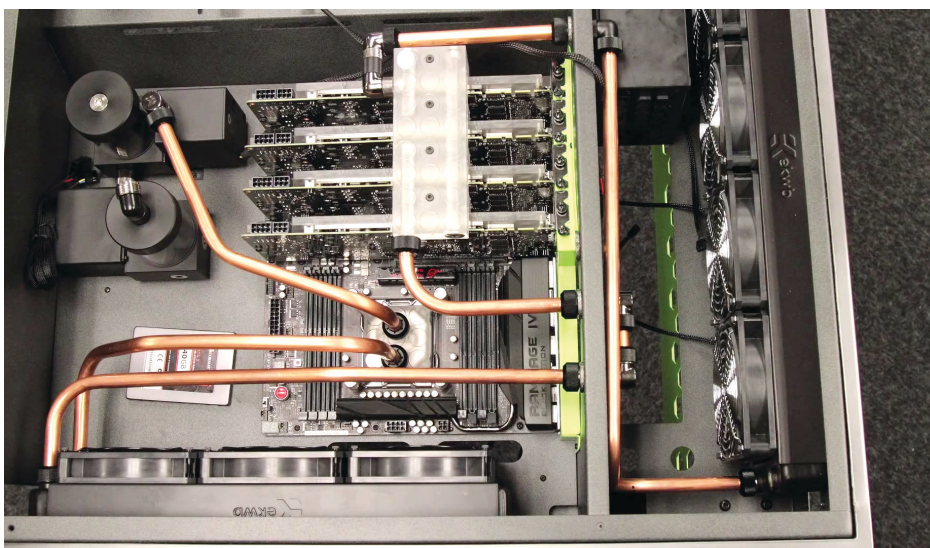
Flexible tubing is easier to customize and install, but it's obviously not a great solution if you need it to conform to a particular path. That's what plastic or metal hardline tubing is for, and it's also less prone to popping out of sockets when accidentally brushed or snagged.



## STEP 5:

### Acrylic vs PETG hardline tubing

Acrylic and PETG both have their respective pros and cons, and neither one is definitively superior in every circumstance. As Lee points out in the video, PETG is easier to work with; it's easier to heat and bend, and less prone to chipping and shattering. Acrylic is optically clearer than PETG, and less likely to deform under high temperatures, but also more difficult to cut and bend. They're both good materials for modders, so go with what works best for you.



## STEP 6:

### Metal tubing

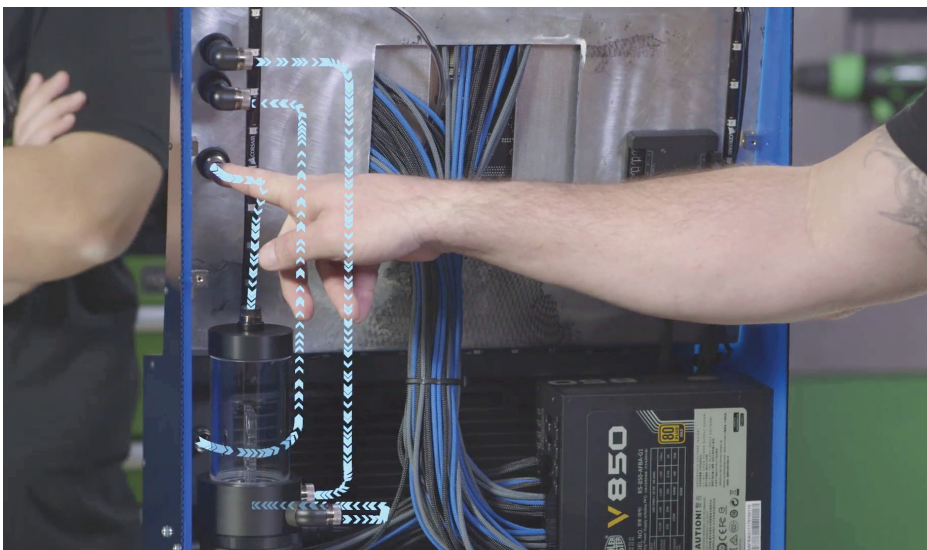
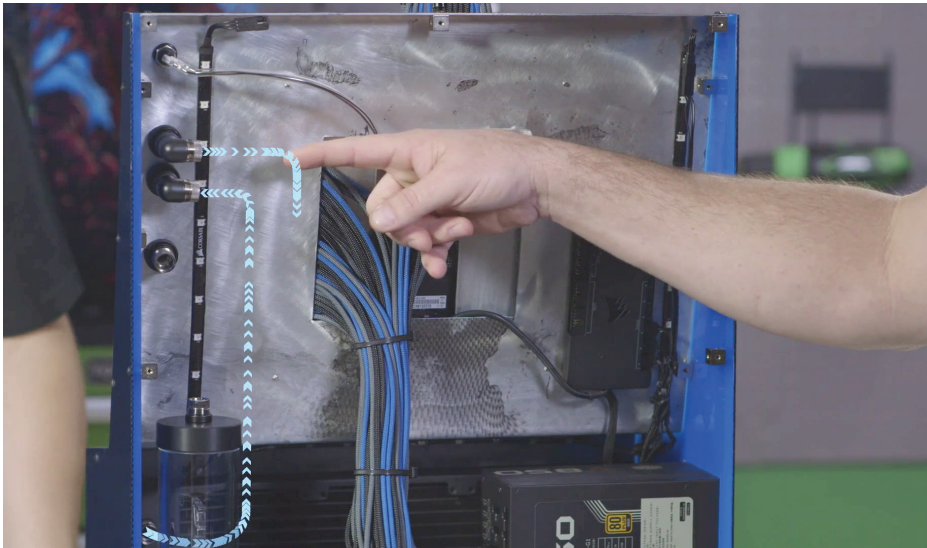
You'll most likely choose one type of metal over another for its cosmetic effect, but there's one hard and fast rule to abide by: *don't include both copper and aluminum in your loop.* That's literally a recipe for corrosion and electrolysis.

## STEP 7:

### Planning your path

The design of your rig will of course be the primary factor in planning your watercooling loop. In our video, for example, Lee points out that the most unobtrusive design—up and over the top of our chassis—wasn't practical, so instead he directed the path across the motherboard to passthroughs on the right for a clean appearance that doesn't make removing the back of the chassis a hassle. He also placed the reservoir in the lower rear of the chassis, a space naturally afforded by our design.

You can place your own reservoir wherever there's room, but you might opt to give it a more prominent position in your case just because it looks cool. At this point, it should be obvious why you want to draw out the path of your watercooling loop before making any decisions about your materials. Where you place your reservoir, for instance, will affect where your tubing will need to go and how many bends are necessary to get there, where you put your passthroughs and fill and drain ports (if any), and how all this positioning may affect airflow or the ease of adding and removing components.



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