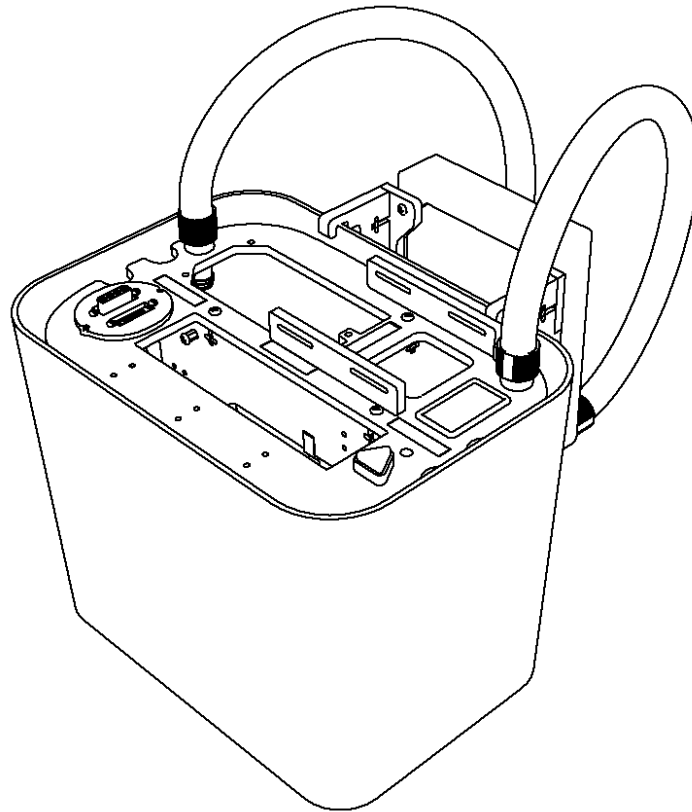# Puget systems

Aquarium DIY Kit
Mini ITX Version 1

Assembly Instructions

WARNING

Submerging your hardware in mineral oil will void your warranty. Do this project only at your own risk. Puget Systems is not liable for any hardware problems or damage to your personal property. Mineral oil is very difficult, if not impossible to clean from your components once they are submerged.

Please be sure to inspect your aquarium parts for shipping damage before installation. In particular, we recommend filling the acrylic tank with water and checking for leaks before proceeding.

Read Before Building Your Aquarium PC

Test your hardware before submerging.

The last thing you want is to find out you have a bad stick of memory once it is already covered in oil! Make sure to test everything thoroughly -- it will save you a lot of headache in the future.

Check that none of the power/data cables use rubber insulation.

Some heatsinks (specifically newer Intel Stock CPU Coolers) user rubber insulation instead of the more common plastic insulation. This gives the cables more flexibility, but since rubber quickly degrades in mineral oil the insulation can dissolve in a matter of days. This can very easily cause wires to come into contact with each other causing the system to short out. If you are not sure of the insulation material, we recommend submerging part of the wire in mineral oil for at least 48 hours. If the insulation appears degraded, use an alternative component with different wire insulation material.

Do <u>not</u> allow the oil to get above 50C

The aquarium tank will develop cracks if exposed to too high of temperatures. Make sure your radiator has adequate airflow to keep your aquarium running cool. The tank is rated for up to 50C, so allowing the oil to get above this temperature puts the tank at risk of cracking. For reference, 50C is roughly the same as the hottest water you should be able to get out of your tap.

Clean everything before submerging.

Make sure that there is no dust on any of the hardware that is going to be used in the system, especially if the hardware has been used before. Even a small amount of dust can make the mineral oil cloudy. If you are using aquarium rocks, be sure to ash your rocks before putting them in the aquarium! They are often covered in dust and other particles, which can cause your aquarium to look cloudy. Put them in a towel, and rinse them off in a sink, then spread them out and allow them time to thoroughly dry before adding them to your aquarium.

Do not power on the pump until it is filled with oil.

The pump **will** burn out if there is no liquid to provide resistance and cooling. If you need to test the system once installed but before filled, simply unplug the pump before powering the system on.

Do not over-tighten the screws.

Acrylic will crack if the screws are over-tightened. You want the screws to be tightened until they are just a little beyond snug.

Do not overfill the aquarium.

Mineral oil will expand slightly as it heats up, so be sure to only fill the aquarium to within a few inches of the top. You should also avoid filling the aquarium to the point that the motherboard ports (keyboard, LAN, etc.) are submerged to help prevent the oil from wicking along the cables.

Use wireless devices whenever possible.

Mineral oil will wick along any cables it comes into contact with. Due to the potential mess this may cause, we recommend using wireless devices whenever possible.

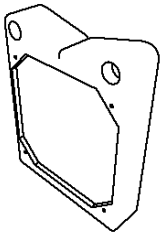# Included Hardware *Images not to scale

Mini ITX Tray Contents (Pre-assembled)

- Acrylic Tray
- Koolance PMP-300 Pump
- SATA & Molex Pass-through
- Power Switch
- 2x Straight Barbs
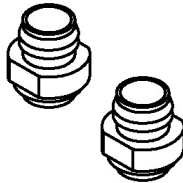- 2x Panel Mount Barbs
- 1x Angled Barb
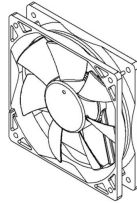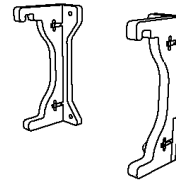- Thermal Display
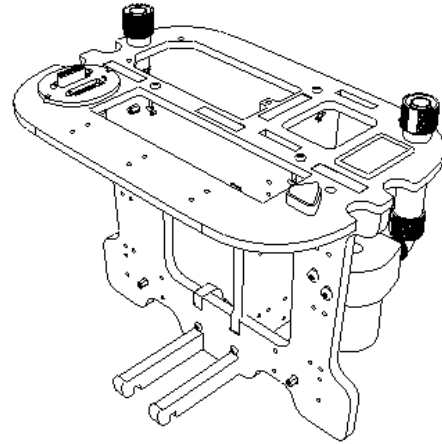
Cooling Components
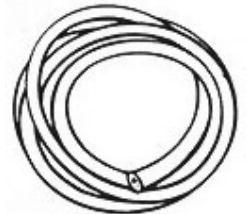
120mm Radiator	2x Straight Barbs (for radiator)	120mm Fan (if purchased)	Radiator Mount (2 piece)	5' of 1/2" Tubing

Other Components

10 Liter Tupperware w/ Lid	2.5" HD Tray (2 piece)	HD Locking Spacer	Power/HD LEDs
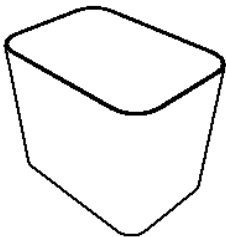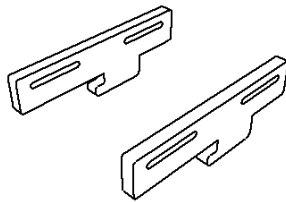
Screws

Scale Image	Quantity	Length	Thread Size	Use
	1	5/8"	No. 6-32	HD Lock
	7	3/8"	No. 6-32	PSU & Radiator Mount
	4	3/16"	No. 6-32	Motherboard
	4	10mm	M3x0.5	2.5" HD Mount
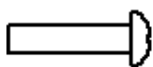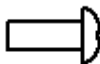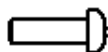
Items You May Need (Not Included)

Tools

Phillips Screwdriver

Scissors

Adjustable Wrench

Zip Ties

Miscellaneous

Mineral Oil

Available at your local hardware store, farm supply store, vet clinic or online from STE Oil.

Aquarium Rocks

Available at your local pet store, aquarium rocks come in various colors and types. These rocks can be a cheap way to really make your computer look like an aquarium!

Bubble Bar, Tubing, Pump & Flow Valve

Also available at your local pet store, bubbles are an essential addon! We recommend a pair of 6 inch bars. The flow valve is necessary as we've found it very convenient to be able to control the flow of air. The valve also provides a convenient joint at which you can disconnect your air tubing if you need to work on or move

Cleaning Supplies & Tools

Mineral oil is messy! Make sure you have the following items on hand: a funnel for cleanly filling the system, paper towels to clean up spills and clean your hands, and orange clean to help make cleanup easier.

Hard Drive Installation
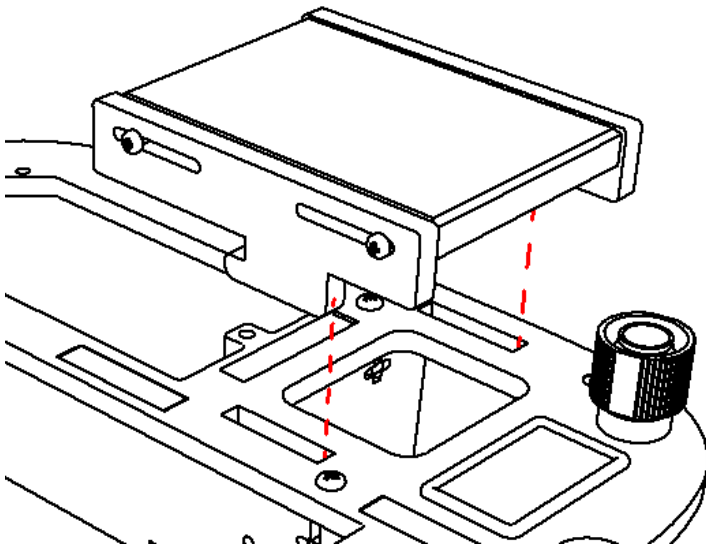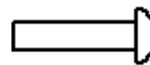
Step 1:
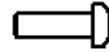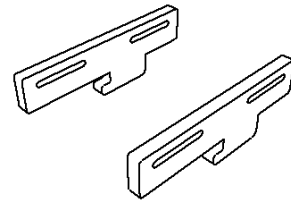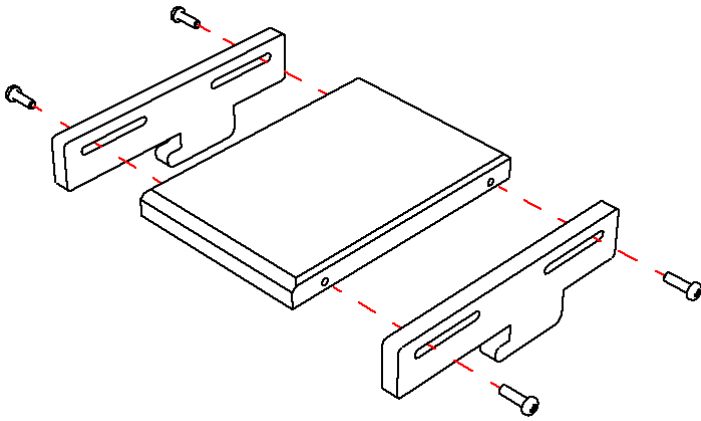
x4   10mm - M3x.5

- Using the four screws, install the hard drive into the tray. The ports should face the same direction as the front of the hooks
- In the image above, the ports would be facing towards the bottom left.

Step 2:

- Drop the assembly into the acrylic tray and push it forward so that the hooks hold the drive down.
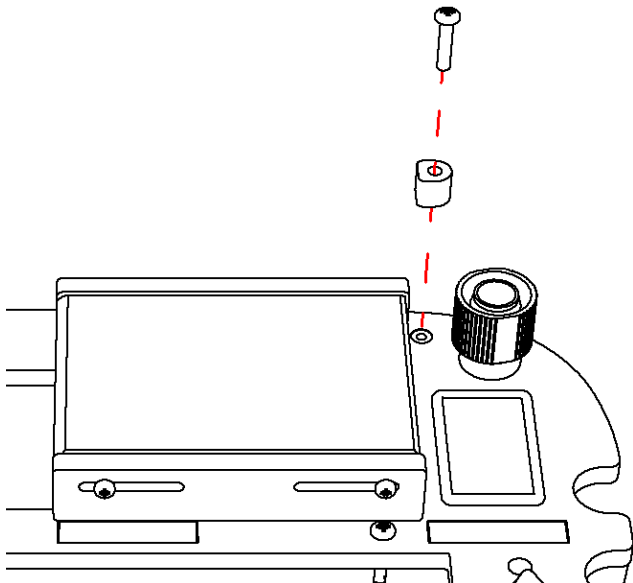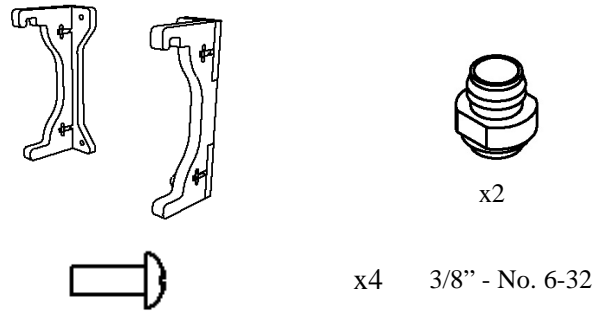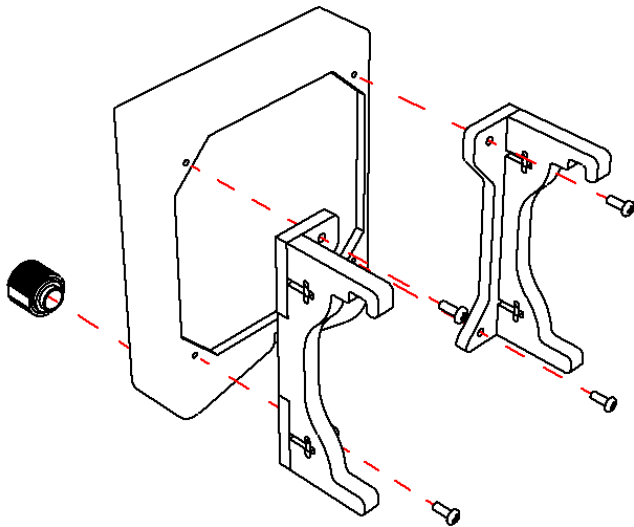
Step 3:

x1   5/8" - No. 6-32

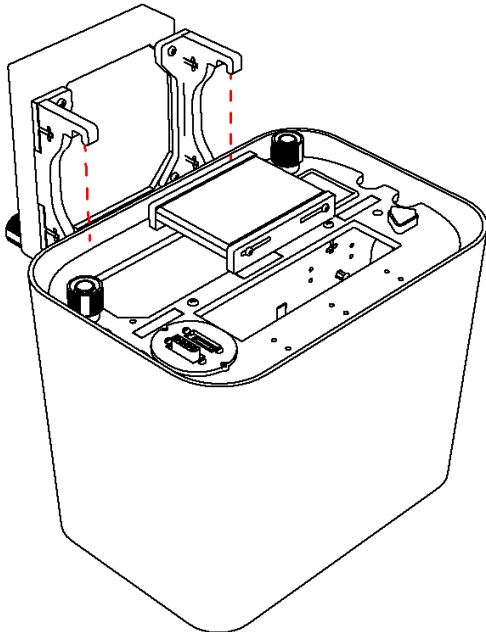- Install the locking spacer with the screw to prevent the drive from sliding back. This secures the drive in place.
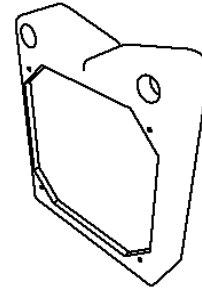
120mm Radiator Installation
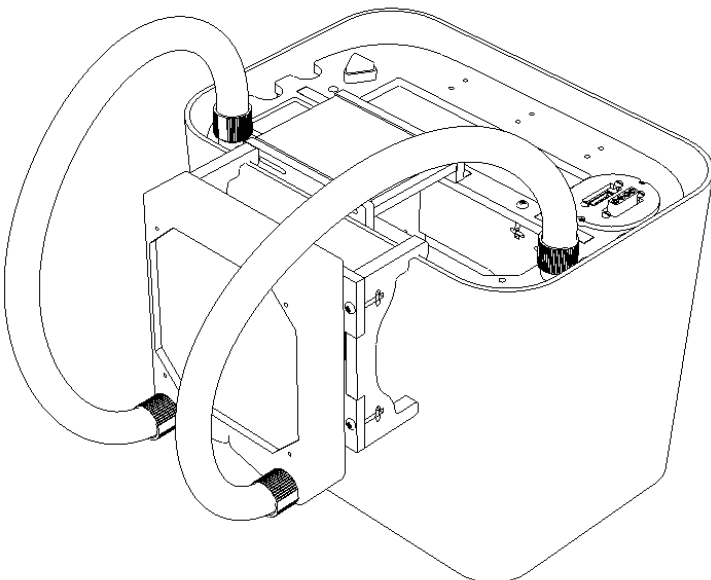
x2

x4   3/8" - No. 6-32

- Screw the radiator onto the acrylic mounts making sure that the hooks on the mount are on the opposite side as the barb fittings.
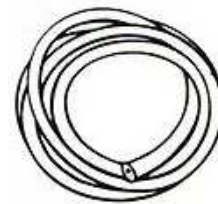- Install the two straight barbs onto the radiator.

Step 2:

- Once the main tray has been installed into the tank, drop the radiator onto the lip of the tank so that the barbs are facing down and away from the system

Step 3:

- Connect the radiator to the two barbs on the main tray.
- Be sure to use long lengths of tubing to ensure that the tubing does not kink.
- Before running the system, install the fan onto the outside of the radiator with it blowing through the radiator towards the system.