

Anet A8 E3D Direct X-Carriage w/ Probe (46mm)



truglodite

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Summary

I am giving credit to IsmaelPR1 for his a8 e3d direct mount design, which I used as inspiration for my x carriage...

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[xcarriage](#)

I am giving credit to IsmaelPR1 for his a8 e3d direct mount design, which I used as inspiration for my x carriage design. His original design is unfortunately meant for 45mm rod spacing (older a8's), lacked a decent z probe mount solution (other remixes with probes were off mark IMHO), and had some minor design issues (mainly the X-belt hole fit, and cooling flow arrangement). I also wanted to add a few creature comforts to complete the bill; so I got out my calipers and freecad, and started from scratch for a complete redraw.

This carriage fits newer A8's with 46mm rod spacing. I added a mount for an M12x1 threaded probe, with 0 y offset, and 33mm x offset (...17b.stl, otherwise see update for M18 probes). There is also a teardrop shape hole above the probe mount to give clearance for larger probes (my clone induction probe is LOOOONG and needs that room for the wires). I also redesigned the right side structure to improve air flow. I added a strain

relief for the wires, a slotted hole to further secure the extruder motor, and a tons of fillets to make it more robust. I added a small chamfer on the top of the hotend mounting "ring". This small feature is important to keep the extruder locked in the proper position (prusa i3 has it too). I also increased the distance between the top bearings to 18mm. No reason not to do this as it doesn't reduce build volume, and it greatly reduces carriage rocking. Last but not least, I added up arrows to the hotend and probe straps. Hopefully they will never get installed upside down this way. ;)

I have this thing printed in abs, 60% bicubic infill, 1mm walls, and board only supports (recommended settings updated... see below). The strain relief part unfortunately requires support. I chose a 40mm hotend fan duct by ChPech for my BB fan, a Mistral 2.1 part blower duct by Leo_N, and an X-belt clip by Simhopp for my printed accessories. I feel those parts are very well engineered, but other options will likely also fit. Everything fit together like a glove for me. This thing has been installed and printing ABS, PLA, and Nylon for >400hrs with zero issues.

[edit: Anticipating questions about the path from extruder wheel to the hotend... It uses an e3d clone with a bowden style heatsink, with the bowden tube fitting removed. The stock A8 throat is inverted so the wider teflon lined end goes down. To assemble first install the e3d, then slide the nut on top of the e3d. Then cut new teflon tube (about 4" long) just the right length so that the motor sits down completely on the top plate without having to squish hard on the tube, and not being too short so the tube can move with retraction (tighten the heartbreak properly before you trim the tube). Slide this tube in to the inverted stock throat, put the motor/top-throat/tube down the hole into the e3d, and tighten the nut. You may have to use some teflon tape, threadlock compound, or pliers on the throat/motor threads as tightening the nut without may result in pulling the throat up into the extruder wheel (a flex adapter helps prevent this... I used this one <https://www.thingiverse.com/thing:2551063>). Optionally, you can use the slotted hole to further secure the motor with an M4 screw. I omitted this myself so I could rotate the motor CG closer to the x-bars.]

Update 5-10-18: I recently bought a Winsinn titanium heat break, which has smaller threads than the steel heat break that came with my clone e3d Bowden hotend. I had a spare e3d direct hotend that has smaller threads. To use it I had to shorten the stock heat break tube about 8mm with my dremel cutoff wheel. I also had to shorten the ptfe tube to fit. It has been working great in a 50C enclosure for several prints. The Winsinn came with a decently polished throat, but I went over it with 1000grit wet sandpaper and a dremel to be sure. ...second update re Ti heatbreaks... Occasionally printing Nylon, the Ti heatbreak failed randomly due to heat creep. I went back to a stainless steel throat and the issues have disappeared (I believe the higher specific heat of stainless helps prevent spikes of heat from running up the hotend).

Update 6-27-18: After building a heated enclosure to print nylon (@50C ambient), I observed 2 things. 1) The probe mount warped downward due to a bit of tension on the probe wire, and 2) The x-belt clip warped and widened enough to let the belt slip a tooth when tensioned. So I reprinted this carriage with 2.5mm walls and 1.7mm floors/ceilings for increased strength, and I remixed the x belt clip for an 0.9mm belt clearance vs 1.0mm for a tighter grip. So far I've gone through a half roll of bridge with the enclosure at 50C without issues.

Update 8-2-2018: As requested, I uploaded "17c" version STL's for those who have M18-1 size probes. This carriage has a slightly smaller X probe offset of 32mm (still 0 y offset). You may notice some other changes from my original; round part missing from the strain relief, fillets slightly different, and file size is much larger. The reason for the former changes is the way I modeled the original was a PITA to modify so some things had to get completely redone (and I left out the less important details to save time). The reason the STL's are so large is simple; I upped the resolution of in FreeCAD so the rendered meshes are much smoother (and larger). Enjoy!

Print Settings

Rafts:

No

Supports:

Yes

Resolution:

0.2mm

Infill:

30%

Notes:

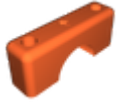
Print with at least 2.5mm wall thickness, and 1.7mm bottom & top thicknesses. Use buildplate only supports for the main carriage, no supports needed for the straps. The main carriage body and hotend strap are printed as is with the orientation in the stl files. The 12mm probe strap needs to be rotated 90 degrees so the arrow points up (the 18mm strap is oriented correctly). Print preferably in abs.

Category: 3D Printer Parts

Model files



a8_e3d-direct17b_hotend_strap.stl



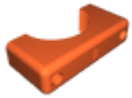
a8_e3d-direct17b_probe_strap.stl



a8_e3d-direct17b_main.stl



a8_e3d-direct17c_main.stl



a8_e3d-direct17c_probe_strap.stl

[Find source .stl files on Thingiverse.com](#)

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