

### BugBu 310 BOM (315x300x300 build volume)

**Please note:** The items listed don't include any extra wiring or a Pi and as with any BOM, there are going to be small miscellaneous parts needed along the way. The scREW assortments will hopefully cover a lot of the miscellaneous. For a more rigid gantry, 4 - 45mm Linear Bearings are better, but the shorter ones in the BOM will work fine. This list is only a guide, better pricing may be found elsewhere. While every effort has been made to make this a complete list, and the design easy to assemble, please know this is still a self sourced ground up 3D printer build and will require printed parts, time, and attention to details. All work is done so at your own risk and without any liability to the designer of the project.

The STL file parts are pre orientated for best printing. Print with no less than 6 walls and 20% infill. The STL file name will tell you quantity of each item and if it needs supports, only two parts should need supports. I use Polymaker PLA Pro for the parts unless I enclose the printer, I go to Polymaker ASA or ABS.

| MOTION:                                     | Quantity | Price Each | Total   | Amazon or Ali Link to Suggested Part  |
|---|----------|------------|---------|---|
| GT2 6mm Belt, 5 meter minimum length        | 1        | \$9.00     | \$9.00  | <a href="https://www.amazon.com/dp/B097T212B9/ref=twister_B09877BH12?encoding=UTF8&amp;psc=1">https://www.amazon.com/dp/B097T212B9/ref=twister_B09877BH12?encoding=UTF8&amp;psc=1</a>   |
| GT2 20 Toothless 5mm bore idler             | 10       | \$1.20     | \$12.00 | <a href="https://www.amazon.com/dp/B07RV2T54M/ref=sr_1_3?crid=OFZKSAD0WYW1&amp;keywords=gPrinter/dp/B07RV2T54M/ref=sr_1_3?crid=OFZKSAD0WYW1&amp;keywords=g">Printer/dp/B07RV2T54M/ref=sr_1_3?crid=OFZKSAD0WYW1&amp;keywords=g</a>   |
| GT2 20 Tooth 5mm bore timing pulley         | 2        | \$4.50     | \$9.00  | <a href="https://www.amazon.com/WINSINN-Aluminum-Timing-Pulley-Printer/dp/B07BPGYX3G/ref=sr_1_6?crid=OFZKSAD0WYW1&amp;keywords=gPrinter/dp/B07BPGYX3G/ref=sr_1_6?crid=OFZKSAD0WYW1&amp;keywords=g">https://www.amazon.com/WINSINN-Aluminum-Timing-Pulley-Printer/dp/B07BPGYX3G/ref=sr_1_6?crid=OFZKSAD0WYW1&amp;keywords=gPrinter/dp/B07BPGYX3G/ref=sr_1_6?crid=OFZKSAD0WYW1&amp;keywords=g</a>   |
| GT2 20 Tooth 5mm bore stepper timing pulley | 3        | \$2.50     | \$7.50  | <a href="https://www.amazon.com/WINSINN-Aluminum-Synchronous-Timing-Pulley/dp/B077GNZK3J/ref=sr_1_3?crid=34KC9XQCOHDJ4&amp;keywords=gt2+5mm+pulley&amp;qid=1676580569&amp;srefix=gt2+5mm+pul%2Caps%2C136&amp;sr=8-3">https://www.amazon.com/WINSINN-Aluminum-Synchronous-Timing-Pulley/dp/B077GNZK3J/ref=sr_1_3?crid=34KC9XQCOHDJ4&amp;keywords=gt2+5mm+pulley&amp;qid=1676580569&amp;srefix=gt2+5mm+pul%2Caps%2C136&amp;sr=8-3</a>                                   |
| GT2 20 Tooth 8mm bore pulley                | 3        | \$2.50     | \$7.50  | <a href="https://www.amazon.com/WINSINN-Aluminum-Synchronous-Timing-Pulley/dp/B077GMKW1C/ref=sr_1_3?crid=34KC9XQCOHDJ4&amp;keywords=gt2%2B5mm%2Bpulley&amp;qid=1676580569&amp;srefix=gt2%2B5mm%2Bpul%2Caps%2C136&amp;sr=8-3&amp;th=1">https://www.amazon.com/WINSINN-Aluminum-Synchronous-Timing-Pulley/dp/B077GMKW1C/ref=sr_1_3?crid=34KC9XQCOHDJ4&amp;keywords=gt2%2B5mm%2Bpulley&amp;qid=1676580569&amp;srefix=gt2%2B5mm%2Bpul%2Caps%2C136&amp;sr=8-3&amp;th=1</a> |
| 8mm linear rod 400mm                        | 7        | \$7.00     | \$49.00 | <a href="https://www.amazon.com/Linear-Motion-15-748-Hardened-Printer/dp/B08JGD9F5P/ref=sr_1_3?crid=36SD6MLPI98FQ&amp;keywords=8mm+linear+rod+400mm&amp;qid=1680481579&amp;srefix=8mm+linear+rod+400mPrinter/dp/B08JGD9F5P/ref=sr_1_3?crid=36SD6MLPI98FQ&amp;keywords=8mm+linear+rod+400m">m%2Caps%2C123&amp;sr=8-3</a>   |

|  |     |         |         |   |
|--|-----|---------|---------|---|
| Linear Bearings  | 10  | \$1.00  | \$10.00 | <a href="https://www.amazon.com/LM8UU-Linear-Bearings-Length-Printer/dp/B087WPGQ8T/ref=sr_1_1_sspa?crid=ORDL87RDH8EQ&amp;keywords=8mm+linear+bearings&amp;qid=1676581514&amp;srefix=8mm+linear+bearings%2Caps%2C136&amp;sr=8-1-spons&amp;psc=1&amp;spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEyTjRCSDI0RUNWUjZJRmVuY3J5cHRIZElkePUeWODkyMjYwM0ZZOFVJNkFKUVhLOSZlbnNyeXB0ZWRBZEIkPUeWMDMxNjg1MVQxUFVBMTRGRVFaTCZ3aWRnZXROYW1IPXNwX2F0ZiZhY3Rpb249Y2xpY2tSZWRpcmVjdCZkb05vdExvZ0NsaWNrPX">https://www.amazon.com/LM8UU-Linear-Bearings-Length-Printer/dp/B087WPGQ8T/ref=sr_1_1_sspa?crid=ORDL87RDH8EQ&amp;keywords=8mm+linear+bearings&amp;qid=1676581514&amp;srefix=8mm+linear+bearings%2Caps%2C136&amp;sr=8-1-spons&amp;psc=1&amp;spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEyTjRCSDI0RUNWUjZJRmVuY3J5cHRIZElkePUeWODkyMjYwM0ZZOFVJNkFKUVhLOSZlbnNyeXB0ZWRBZEIkPUeWMDMxNjg1MVQxUFVBMTRGRVFaTCZ3aWRnZXROYW1IPXNwX2F0ZiZhY3Rpb249Y2xpY2tSZWRpcmVjdCZkb05vdExvZ0NsaWNrPX</a> |
| Nema17 42mm stepper motor  | 3   | \$8.25  | \$24.75 | <a href="https://www.amazon.com/POLISI3D-Printer-Stepper-Stepping-Connector/dp/B08HWGY9D/ref=sr_1_20?crid=16ZTNIBQWH1GK&amp;keywords=nema+stepper+motor+42&amp;qid=1676581694&amp;srefix=Nema+stepper+moto%2Caps%2C141&amp;sr=8-20">https://www.amazon.com/POLISI3D-Printer-Stepper-Stepping-Connector/dp/B08HWGY9D/ref=sr_1_20?crid=16ZTNIBQWH1GK&amp;keywords=nema+stepper+motor+42&amp;qid=1676581694&amp;srefix=Nema+stepper+moto%2Caps%2C141&amp;sr=8-20</a>   |
| 8mm 4-start lead screw 400mm   | 3   | \$11.00 | \$33.00 | <a href="https://www.amazon.com/400mm%EF%BC%8815-75-Inches%EF%BC%89Tr8x8-Thread-Printer-Machine/dp/B08JPNMWP8/ref=sr_1_5?crid=S1L4IA8394FL&amp;keywords=400mm+T8+Tr8x8+Lead+Screw&amp;qid=1680481664&amp;srefix=400mm+t8+tr8x8+lead+screw%2Caps%2C151&amp;sr=8-5">https://www.amazon.com/400mm%EF%BC%8815-75-Inches%EF%BC%89Tr8x8-Thread-Printer-Machine/dp/B08JPNMWP8/ref=sr_1_5?crid=S1L4IA8394FL&amp;keywords=400mm+T8+Tr8x8+Lead+Screw&amp;qid=1680481664&amp;srefix=400mm+t8+tr8x8+lead+screw%2Caps%2C151&amp;sr=8-5</a>   |
| Closed Loop GT2 6mm belt, 1434mm   | 1   | \$7.00  | \$7.00  | <a href="https://www.aliexpress.us/item/2251832627424600.html?spm=a2g0o_or_der_detail.order_detail_item.5.1295f19caLCB1a&amp;gatewayAdapt=glo2usa&amp;randl_shipto=US">https://www.aliexpress.us/item/2251832627424600.html?spm=a2g0o_or_der_detail.order_detail_item.5.1295f19caLCB1a&amp;gatewayAdapt=glo2usa&amp;randl_shipto=US</a>   |
| 608 Bearings 8x22x7 skateboard bearings  | 9   | \$0.56  | \$5.04  | <a href="https://www.amazon.com/%EF%BC%BB10-Pack%EF%BC%BD-608-Ball-Bearings/dp/B08XVFSZTF/ref=sr_1_4?crid=1QS8OGIPNR2RK&amp;keywords=608+bearing&amp;qid=1677779566&amp;s=industrial&amp;srefix=608+bearing%2Cindustrial%2C174&amp;sr=1-4">https://www.amazon.com/%EF%BC%BB10-Pack%EF%BC%BD-608-Ball-Bearings/dp/B08XVFSZTF/ref=sr_1_4?crid=1QS8OGIPNR2RK&amp;keywords=608+bearing&amp;qid=1677779566&amp;s=industrial&amp;srefix=608+bearing%2Cindustrial%2C174&amp;sr=1-4</a>   |
| <b>HARDWARE</b>  |     |         |         |   |
| Full fastener cart from Bolt Depot   |     |         |         |   |
| <b>NOTE: Add all items on the list to your cart. This should be all the fasteners you need ACCEPT the t-nuts. T-nuts listed below.</b>     |     |         |         |   |
| M5 T-slot/T-nut (this link is for the twist style, there is a link below in alternates for spring loaded. Pick your preference)            | 1   | \$35.00 | \$35.00 | <a href="https://www.boltdepot.com/cart/208641">https://www.boltdepot.com/cart/208641</a>   |
|  | 100 | \$0.06  | \$6.00  | <a href="https://www.amazon.com/Hulless-Sliding-Fastener-Aluminum-Accessories/dp/B08NZMVP6N/ref=sr_1_14?keywords=m5+t+nut&amp;qid=1676582188&amp;srefix=m5+t%2Caps%2C237&amp;sr=8-14">https://www.amazon.com/Hulless-Sliding-Fastener-Aluminum-Accessories/dp/B08NZMVP6N/ref=sr_1_14?keywords=m5+t+nut&amp;qid=1676582188&amp;srefix=m5+t%2Caps%2C237&amp;sr=8-14</a>   |
| 2020 aluminum extrusion 400mm 10 pack (t or v slot)  |     |         |         | <a href="https://www.amazon.com/Aluminum-Extrusion-European-Standard-Industrial/dp/B0B2P434PD/ref=sr_1_8?crid=2H8WDJUWS4H8K&amp;keywords=2020%2Baluminum%2Bextrusion%2B300mm&amp;qid=1676582392&amp;srefix=2020%2Baluminum%2Bextrusion%2B300mm%2Caps%2C154&amp;sr=8-8&amp;th=1">https://www.amazon.com/Aluminum-Extrusion-European-Standard-Industrial/dp/B0B2P434PD/ref=sr_1_8?crid=2H8WDJUWS4H8K&amp;keywords=2020%2Baluminum%2Bextrusion%2B300mm&amp;qid=1676582392&amp;srefix=2020%2Baluminum%2Bextrusion%2B300mm%2Caps%2C154&amp;sr=8-8&amp;th=1</a>   |
| <b>You will need a 10 pack and 4 pack, 12 pieces for the frame and 1 for the print bed (print bed piece can be left 300 or cut to 200)</b> | 10  | \$4.00  | \$40.00 |   |

|   |   |         |         |   |
|---|---|---------|---------|---|
| 2020 aluminum extrusion 400mm 4 pack(t or v slot)   | 4 | \$4.75  | \$19.00 | <a href="https://www.amazon.com/OUYZGIA-Aluminum-Extrusion-Extruded-Building/dp/B0B2N3F8DS/ref=sr_1_8?keywords=2020%2Baluminum%2Bextrusion%2B300mm&amp;qid=1678578206&amp;sr=8-8&amp;th=1">https://www.amazon.com/OUYZGIA-Aluminum-Extrusion-Extruded-Building/dp/B0B2N3F8DS/ref=sr_1_8?keywords=2020%2Baluminum%2Bextrusion%2B300mm&amp;qid=1678578206&amp;sr=8-8&amp;th=1</a>   |
|   |   |         | \$0.00  |   |
| <b>EXTRUDER: Note that my design can accommodate a few designs, select which one you want to use, just note you will need a different gear kit for the Hummingbird Extruder</b> |   |         | \$0.00  |   |
| BMG dual drive extruder kit   | 1 | \$18.00 | \$18.00 | <a href="https://www.amazon.com/Precision-Printer-Plating-Hardened-Extruder/dp/B097YL3C6J/ref=sr_1_14?keywords=bmg+clone+dual+gear+extruder&amp;qid=1676582650&amp;prefix=BMG+clone%2Caps%2C151&amp;sr=8-14">https://www.amazon.com/Precision-Printer-Plating-Hardened-Extruder/dp/B097YL3C6J/ref=sr_1_14?keywords=bmg+clone+dual+gear+extruder&amp;qid=1676582650&amp;prefix=BMG+clone%2Caps%2C151&amp;sr=8-14</a>   |
| 3D Printed Sherpa Mini (Print parts and assemble)<br>Use the STL's and build instructions from the GitHub   | 1 |         |         | <a href="https://github.com/Annex-Engineering/Sherpa_Mini-Extruder">https://github.com/Annex-Engineering/Sherpa_Mini-Extruder</a>   |
| 3D Printed Hummingbird (Print parts and assemble.<br>Order big gear kit from Github link) Use the STL's and build instructions from the GitHub                                  |   |         |         | <a href="https://github.com/nhchiu/VoronMods/tree/main/Extruders/Hummingbird">https://github.com/nhchiu/VoronMods/tree/main/Extruders/Hummingbird</a>   |
|   |   |         | \$0.00  |   |
| <b>HEATED BED</b>   |   |         | \$0.00  |   |
| Standard ender CR-10 310x310 24v bed  | 1 | \$42.00 | \$42.00 | <a href="https://www.amazon.com/310x310mm-Aluminum-HeatBed-Thickness-Creality/dp/B07H8DXVQD/ref=sr_1_3?keywords=310x310+heated+bed+24v&amp;qid=1680482409&amp;prefix=310x310+24%2Caps%2C161&amp;sr=8-3">https://www.amazon.com/310x310mm-Aluminum-HeatBed-Thickness-Creality/dp/B07H8DXVQD/ref=sr_1_3?keywords=310x310+heated+bed+24v&amp;qid=1680482409&amp;prefix=310x310+24%2Caps%2C161&amp;sr=8-3</a>   |
| 235x235 build sheet   | 1 | \$12.00 | \$12.00 | <a href="https://www.amazon.com/dp/B0856VT5XT?pd_rd_i=B0856VT5XT&amp;pf_rd_p=b000e0a0-9e93-480f-bf78-a83c8136dfcb&amp;pf_rd_r=CQBSE277ST4E0VEGNKTN&amp;pd_rd_wg=zhEJn&amp;pd_rd_w=gKyDr&amp;pd_rd_r=8b2b8744-7140-4013-a04d-4a382d215ea4">https://www.amazon.com/dp/B0856VT5XT?pd_rd_i=B0856VT5XT&amp;pf_rd_p=b000e0a0-9e93-480f-bf78-a83c8136dfcb&amp;pf_rd_r=CQBSE277ST4E0VEGNKTN&amp;pd_rd_wg=zhEJn&amp;pd_rd_w=gKyDr&amp;pd_rd_r=8b2b8744-7140-4013-a04d-4a382d215ea4</a> |
|   |   |         | \$0.00  |   |
| <b>ELECTRONICS</b>  |   |         | \$0.00  |   |
| 3D Touch  | 1 | \$16.00 | \$16.00 | <a href="https://www.amazon.com/3Dman-Upgrade-Leveling-Sensor-Printers/dp/B08SK62RMR/ref=sr_1_3?crid=22IW0RUW9WRAY&amp;keywords=3dtouch&amp;qid=1677710973&amp;prefix=3dtouch%2Caps%2C178&amp;sr=8-3">https://www.amazon.com/3Dman-Upgrade-Leveling-Sensor-Printers/dp/B08SK62RMR/ref=sr_1_3?crid=22IW0RUW9WRAY&amp;keywords=3dtouch&amp;qid=1677710973&amp;prefix=3dtouch%2Caps%2C178&amp;sr=8-3</a>   |

|   |   |         |         |   |
|---|---|---------|---------|---|
| 24v Power Supply  | 1 | \$24.00 | \$24.00 | <a href="https://www.amazon.com/ALITOVE-Universal-Regulated-Switching-Transformer/dp/B06XK2ZNNK/ref=sxsts_rp_s_a_1_0?content-id=amzn1.sym.eff26b9b-e255-411b-a40d-eccb21f93fe4%3Aamzn1.sym.eff26b9b-e255-411b-a40d-eccb21f93fe4&amp;cv_ct_cx=24v+power+supply&amp;keywords=24v+power+supply&amp;pd_rd_i=B06XK2ZNNK&amp;pd_rd_r=82e418c1-9755-4243-a4ff-468e2e00e2d1&amp;pd_rd_w=yv5NL&amp;pd_rd_wg=3OEbB&amp;pf_rd_p=eff26b9b-e255-411b-a40d-eccb21f93fe4&amp;pf_rd_r=FP42ARPOASMB46W1HM9X&amp;qid=1676582807&amp;prefix=24v+%2Caps%2C461&amp;sr=1-1-5985efba-8948-4f09-9122-d605505c9d1e">https://www.amazon.com/ALITOVE-Universal-Regulated-Switching-Transformer/dp/B06XK2ZNNK/ref=sxsts_rp_s_a_1_0?content-id=amzn1.sym.eff26b9b-e255-411b-a40d-eccb21f93fe4%3Aamzn1.sym.eff26b9b-e255-411b-a40d-eccb21f93fe4&amp;cv_ct_cx=24v+power+supply&amp;keywords=24v+power+supply&amp;pd_rd_i=B06XK2ZNNK&amp;pd_rd_r=82e418c1-9755-4243-a4ff-468e2e00e2d1&amp;pd_rd_w=yv5NL&amp;pd_rd_wg=3OEbB&amp;pf_rd_p=eff26b9b-e255-411b-a40d-eccb21f93fe4&amp;pf_rd_r=FP42ARPOASMB46W1HM9X&amp;qid=1676582807&amp;prefix=24v+%2Caps%2C461&amp;sr=1-1-5985efba-8948-4f09-9122-d605505c9d1e</a> |
| BTT E3 V2/V3 or MKS Robin E3 v1.1<br>Triangle-lab CHC hotend<br><b>The link gives you the option of either standard or volcano for \$5 more, the volcano is recommended over the standard</b> | 1 | \$40.00 | \$40.00 | <a href="https://www.amazon.com/BIGTREETECH-Upgrade-Control-TMC2209-Creality/dp/B0882QGFZR/ref=sr_1_1_sspa?crid=WGO9880SJLPG&amp;keywords=bbt+skr+mini+e3&amp;qid=1676582979&amp;prefix=bbt+skr+mini+e3%2Caps%2C132&amp;sr=8-1-spons&amp;psc=1&amp;spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUFQWDA4RVRFNFhGR00mZW5jcnlwdGVkSWQ9QTawMTk0OTROOFdVWVhEWDdBRjcmZW5jcnlwdGVkQWRJZD1BMdA2MjM2MTFLUVE1UzUwVU5GUIMmd2lkZ2V0TmFtZT1zcF9hdGYmYWN0aW9uPWNsaWNrUmVkaXJlY3QmZG9Ob3RMRmB2dDbGljaz10cnVl">https://www.amazon.com/BIGTREETECH-Upgrade-Control-TMC2209-Creality/dp/B0882QGFZR/ref=sr_1_1_sspa?crid=WGO9880SJLPG&amp;keywords=bbt+skr+mini+e3&amp;qid=1676582979&amp;prefix=bbt+skr+mini+e3%2Caps%2C132&amp;sr=8-1-spons&amp;psc=1&amp;spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUFQWDA4RVRFNFhGR00mZW5jcnlwdGVkSWQ9QTawMTk0OTROOFdVWVhEWDdBRjcmZW5jcnlwdGVkQWRJZD1BMdA2MjM2MTFLUVE1UzUwVU5GUIMmd2lkZ2V0TmFtZT1zcF9hdGYmYWN0aW9uPWNsaWNrUmVkaXJlY3QmZG9Ob3RMRmB2dDbGljaz10cnVl</a>   |
|   | 1 | \$35.00 | \$35.00 | <a href="https://west3d.com/products/chc-ceramic-heater-core-hot-end-kit-v6-and-volcano-variants-pro">https://west3d.com/products/chc-ceramic-heater-core-hot-end-kit-v6-and-volcano-variants-pro</a>   |
| Nema 14 Pancake Stepper   | 1 | \$22.00 | \$22.00 | <a href="https://www.amazon.com/FYSETC-Printer-Extruder-47-2inch-Accessories/dp/B099JMJNH2/ref=sr_1_14?keywords=nema+14+stepper&amp;qid=1676583366&amp;prefix=nema+14+%2Caps%2C156&amp;sr=8-14">https://www.amazon.com/FYSETC-Printer-Extruder-47-2inch-Accessories/dp/B099JMJNH2/ref=sr_1_14?keywords=nema+14+stepper&amp;qid=1676583366&amp;prefix=nema+14+%2Caps%2C156&amp;sr=8-14</a>   |
| 3010 24v Fan  | 1 | \$9.00  | \$9.00  | <a href="https://www.amazon.com/HKWANTAT-Bearings-Brushless-Cooling-30x30x10mm/dp/B09MCJ2XSP/ref=sr_1_11?keywords=3010%2Bfan%2B24v&amp;qid=1676583429&amp;prefix=3010%2Caps%2C192&amp;sr=8-11&amp;th=1">https://www.amazon.com/HKWANTAT-Bearings-Brushless-Cooling-30x30x10mm/dp/B09MCJ2XSP/ref=sr_1_11?keywords=3010%2Bfan%2B24v&amp;qid=1676583429&amp;prefix=3010%2Caps%2C192&amp;sr=8-11&amp;th=1</a><br><a href="https://www.amazon.com/Brushless-Hydraulic-50mmx50mmx15mm-Appliances-Replacement/dp/B0BBZPB4DM/ref=sr_1_5?crid=1QIVTONGU4CGO&amp;keywords=5015+24v&amp;qid=1676583496&amp;prefix=5015+24v%2Caps%2C133&amp;sr=8-5">https://www.amazon.com/Brushless-Hydraulic-50mmx50mmx15mm-Appliances-Replacement/dp/B0BBZPB4DM/ref=sr_1_5?crid=1QIVTONGU4CGO&amp;keywords=5015+24v&amp;qid=1676583496&amp;prefix=5015+24v%2Caps%2C133&amp;sr=8-5</a>  |
| 5015 24v Fan  | 1 | \$9.00  | \$9.00  | <a href="https://www.amazon.com/Brushless-Hydraulic-50mmx50mmx15mm-Appliances-Replacement/dp/B0BBZPB4DM/ref=sr_1_5?crid=1QIVTONGU4CGO&amp;keywords=5015+24v&amp;qid=1676583496&amp;prefix=5015+24v%2Caps%2C133&amp;sr=8-5">r=8-5</a>  |

|                     |   |        |         |   |
|---------------------|---|--------|---------|---|
| Fan wire extensions | 2 | \$5.50 | \$11.00 | <a href="https://www.amazon.com/REIFENG-Printer-Cooling-Extension-Connection/dp/B09BN5X6ZT/ref=sr_1_3?crid=6U1XLUWJHV7S&amp;keywords=jst+2.54+fan+wire+extension&amp;qid=1680481307&amp;sprefix=jst+2.54+fan+wire+extension%2Caps%2C147&amp;sr=8-3">https://www.amazon.com/REIFENG-Printer-Cooling-Extension-Connection/dp/B09BN5X6ZT/ref=sr_1_3?crid=6U1XLUWJHV7S&amp;keywords=jst+2.54+fan+wire+extension&amp;qid=1680481307&amp;sprefix=jst+2.54+fan+wire+extension%2Caps%2C147&amp;sr=8-3</a> |
| Power Switch        | 1 | \$8.00 | \$8.00  | <a href="https://www.amazon.com/dp/B07KS2TQ45?ref=ppx_yo2ov_dt_b_product_details&amp;th=1">https://www.amazon.com/dp/B07KS2TQ45?ref=ppx_yo2ov_dt_b_product_details&amp;th=1</a>   |
| \$519.79            |   |        |         |   |

## Alternate parts and upgrades

|  |  |  |  |   |
|--|--|--|--|---|
| Spring Loaded t-nuts                         |  |  |  | <a href="https://www.amazon.com/Rierdge-European-Standard-Aluminum-Extrusion/dp/B09B3H8RJP/ref=sr_1_4?crid=1LCXS8NV1BOIE&amp;keywords=m5+spring+loaded+t+nut&amp;qid=1680480766&amp;sprefix=m5+spring+loaded+t+nut%2Caps%2C121&amp;sr=8-4">https://www.amazon.com/Rierdge-European-Standard-Aluminum-Extrusion/dp/B09B3H8RJP/ref=sr_1_4?crid=1LCXS8NV1BOIE&amp;keywords=m5+spring+loaded+t+nut&amp;qid=1680480766&amp;sprefix=m5+spring+loaded+t+nut%2Caps%2C121&amp;sr=8-4</a> |
| Pre-assembled Sherpa Mini with stepper motor |  |  |  | <a href="https://www.amazon.com/FYSETC-Sherpa-Extruder-Compatible-Printer/dp/B095WFBGL4/ref=sr_1_2?crid=13BPJS0ETHO6X&amp;keywords=sherpa+mini&amp;qid=1680480906&amp;sprefix=sherpa+mini%2Caps%2C151&amp;sr=8-2">https://www.amazon.com/FYSETC-Sherpa-Extruder-Compatible-Printer/dp/B095WFBGL4/ref=sr_1_2?crid=13BPJS0ETHO6X&amp;keywords=sherpa+mini&amp;qid=1680480906&amp;sprefix=sherpa+mini%2Caps%2C151&amp;sr=8-2</a>   |
| BTT BLTouch                                  |  |  |  | <a href="https://www.amazon.com/BIGTREETECH-BLTouch-Leveling-Extension-Upgrade/dp/B087CQ3RLG/ref=sr_1_5?crid=99UVVWHZ6JWE&amp;keywords=BLtouch&amp;qid=1680481034&amp;sprefix=bltouch%2Caps%2C134&amp;sr=8-5&amp;th=1">https://www.amazon.com/BIGTREETECH-BLTouch-Leveling-Extension-Upgrade/dp/B087CQ3RLG/ref=sr_1_5?crid=99UVVWHZ6JWE&amp;keywords=BLtouch&amp;qid=1680481034&amp;sprefix=bltouch%2Caps%2C134&amp;sr=8-5&amp;th=1</a>   |
| Creality CRTouch                             |  |  |  | <a href="https://www.amazon.com/gp/product/B09XCGPLXH/ref=ewc_pr_img_1?smid=A113EI13J39RO4&amp;psc=1">https://www.amazon.com/gp/product/B09XCGPLXH/ref=ewc_pr_img_1?smid=A113EI13J39RO4&amp;psc=1</a>   |

**Individual fastener list in case you need to source from elsewhere**

|                              |   |         |   |
|------------------------------|---|---------|---|
| M3, M4, M5 Nut and Screw Kit | 1 | \$15.00 | <a href="https://www.amazon.com/Hilitchi-510-Pcs-Socket-Screws-Assortment/dp/B073SWXPYR/ref=sxin_17_ac_d_bv?ac_md=0-0-QnVkZ2V0IFBpY2s%3D-ac_d_bv_bv_bv&amp;content-id=amzn1.sym.8f2bf95d-b9c2-4e6d-96a9-5fdf77a1951d%3Aamzn1.sym.8f2bf95d-b9c2-4e6d-96a9-5fdf77a1951d&amp;cv_ct_cx=m3+m4+m5+screw+assortment&amp;keywords=m3+m4+m5+screw+assortment&amp;pd_rd_i=B073SWXPYR&amp;pd_rd_r=8e8cc7e2-48b9-4a51-b752-0186dd22447b&amp;pd_rd_w=jmPHz&amp;pd_rd_wg=kQ31h&amp;pf_rd_p=8f2bf95d-b9c2-4e6d-96a9-5fdf77a1951d&amp;pf_rd_r=RBMRTG4MGTVCWFG3QMHH&amp;qid=1677710013&amp;srefix=M3+M4+M%2Caps%2C158&amp;sr=1-1-270ce31b-afa8-499f-878b-3bb461a9a5a6">https://www.amazon.com/Hilitchi-510-Pcs-Socket-Screws-Assortment/dp/B073SWXPYR/ref=sxin_17_ac_d_bv?ac_md=0-0-QnVkZ2V0IFBpY2s%3D-ac_d_bv_bv_bv&amp;content-id=amzn1.sym.8f2bf95d-b9c2-4e6d-96a9-5fdf77a1951d%3Aamzn1.sym.8f2bf95d-b9c2-4e6d-96a9-5fdf77a1951d&amp;cv_ct_cx=m3+m4+m5+screw+assortment&amp;keywords=m3+m4+m5+screw+assortment&amp;pd_rd_i=B073SWXPYR&amp;pd_rd_r=8e8cc7e2-48b9-4a51-b752-0186dd22447b&amp;pd_rd_w=jmPHz&amp;pd_rd_wg=kQ31h&amp;pf_rd_p=8f2bf95d-b9c2-4e6d-96a9-5fdf77a1951d&amp;pf_rd_r=RBMRTG4MGTVCWFG3QMHH&amp;qid=1677710013&amp;srefix=M3+M4+M%2Caps%2C158&amp;sr=1-1-270ce31b-afa8-499f-878b-3bb461a9a5a6</a> |
| M3 longer fastener kit       | 1 | \$9.28  | <a href="https://www.amazon.com/iexcell-Metric-M5-0-8-Stainless-Assortment/dp/B08GZWVN4D/ref=sr_1_11?crid=3P17MCP2BHY7A&amp;keywords=m5x25%2Bto%2Bm5x40&amp;qid=1679576219&amp;srefix=m5x25%2Bto%2Bm5x40%2Caps%2C125&amp;sr=8-11&amp;th=1">https://www.amazon.com/iexcell-Metric-M5-0-8-Stainless-Assortment/dp/B08GZWVN4D/ref=sr_1_11?crid=3P17MCP2BHY7A&amp;keywords=m5x25%2Bto%2Bm5x40&amp;qid=1679576219&amp;srefix=m5x25%2Bto%2Bm5x40%2Caps%2C125&amp;sr=8-11&amp;th=1</a>   |
| M5 longer fastener kit       | 1 | \$9.80  | <a href="https://www.amazon.com/iexcell-Metric-M5-0-8-Stainless-Assortment/dp/B07HDL3KVG/ref=sr_1_11?crid=3P17MCP2BHY7A&amp;keywords=m5x25%2Bto%2Bm5x40&amp;qid=1679576219&amp;srefix=m5x25%2Bto%2Bm5x40%2Caps%2C125&amp;sr=8-11&amp;th=1">https://www.amazon.com/iexcell-Metric-M5-0-8-Stainless-Assortment/dp/B07HDL3KVG/ref=sr_1_11?crid=3P17MCP2BHY7A&amp;keywords=m5x25%2Bto%2Bm5x40&amp;qid=1679576219&amp;srefix=m5x25%2Bto%2Bm5x40%2Caps%2C125&amp;sr=8-11&amp;th=1</a>   |
| Assorted M3 Kit              | 1 | \$12.00 | <a href="https://www.amazon.com/Kadrick-Bolts%EF%BC%8CFlat-Washers-Assortment-Stainless/dp/B0BPFWB8F9/ref=sr_1_1_sspa?keywords=m3+screw+assortment&amp;qid=1676582234&amp;srefix=m3%2Caps%2C229&amp;sr=8-1-spons&amp;psc=1&amp;spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUE3T1dHOFRKREFN00mZW5jcnlwdGVkSWQ9QTA0MzU1MDgzSVdTSUdRRlIQ2NVBOJmVuY3J5cHRlZEFkSWQ9QTAwMjM5ODcxT0pGTURMRUdQSUZlZGdlE5hbWU9c3BfYXRmJmFjdGlvdj1jbGlja1JlZGlyZWNOJmRvTm90TG9nQ2xpY2s9dHJ1ZQ==">https://www.amazon.com/Kadrick-Bolts%EF%BC%8CFlat-Washers-Assortment-Stainless/dp/B0BPFWB8F9/ref=sr_1_1_sspa?keywords=m3+screw+assortment&amp;qid=1676582234&amp;srefix=m3%2Caps%2C229&amp;sr=8-1-spons&amp;psc=1&amp;spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUE3T1dHOFRKREFN00mZW5jcnlwdGVkSWQ9QTA0MzU1MDgzSVdTSUdRRlIQ2NVBOJmVuY3J5cHRlZEFkSWQ9QTAwMjM5ODcxT0pGTURMRUdQSUZlZGdlE5hbWU9c3BfYXRmJmFjdGlvdj1jbGlja1JlZGlyZWNOJmRvTm90TG9nQ2xpY2s9dHJ1ZQ==</a>   |
| M4x50 countersunk flat head  | 4 | \$2.00  | <a href="https://www.amazon.com/METALLIXITY-Countersunk-Machine-M4x30mm-Stainless/dp/B09Y5P7X75/ref=sr_1_35?crid=6ITT1GZQTJ20&amp;keywords=m4%2Bx40%2Bcountersunk%2Bscrew&amp;qid=1676582605&amp;srefix=m4%2Bx40%2Bcountersunk%2Bscrew%2Caps%2C131&amp;sr=8-35&amp;th=1">https://www.amazon.com/METALLIXITY-Countersunk-Machine-M4x30mm-Stainless/dp/B09Y5P7X75/ref=sr_1_35?crid=6ITT1GZQTJ20&amp;keywords=m4%2Bx40%2Bcountersunk%2Bscrew&amp;qid=1676582605&amp;srefix=m4%2Bx40%2Bcountersunk%2Bscrew%2Caps%2C131&amp;sr=8-35&amp;th=1</a>   |

M5x12 (M5x10 works too) button head

100

\$0.10

[https://www.amazon.com/M5-0-8-Button-Socket-Stainless-Quantity/dp/B07NVJT9VB/ref=sr\\_1\\_1\\_sspa?crid=2ESZ8FANAWB42&keywords=m5x12&qid=1676582167&srefix=m5x12%2Caps%2C153&sr=8-1-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUExNEtPTINGRFhQR0tNJmVuY3J5cHRlZEIkPUExNjE3MjQyNFBaWERJNkJaNFZCJmVuY3J5cHRlZEFkSWQ9QTAxMTk0NzMxTjlkWDg1SDVHN1NaJndpZGdldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGlyZWNOJmRvTm90TG9nQ2xpY2s9dHJ1ZQ==](https://www.amazon.com/M5-0-8-Button-Socket-Stainless-Quantity/dp/B07NVJT9VB/ref=sr_1_1_sspa?crid=2ESZ8FANAWB42&keywords=m5x12&qid=1676582167&srefix=m5x12%2Caps%2C153&sr=8-1-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUExNEtPTINGRFhQR0tNJmVuY3J5cHRlZEIkPUExNjE3MjQyNFBaWERJNkJaNFZCJmVuY3J5cHRlZEFkSWQ9QTAxMTk0NzMxTjlkWDg1SDVHN1NaJndpZGdldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGlyZWNOJmRvTm90TG9nQ2xpY2s9dHJ1ZQ==)