

X Carriage		
Part	Qty	Type
1 X Axis Plate Front	1	3D or AI
2 X Axis Plate Back	1	3D or AI
3 Delrin Wheel	8	
4 M5 x 8mm Low Profile Screw	6	
5 M5 x 55mm Low Profile Screw	4	
6 M5 Lock Nut	4	
7 Eccentric Spacer 6mm	4	
8 Spacer 9.77mm	4	3D
9 Aluminum Spacer 6mm	4	3D or AI
10 NEMA 17	1	
11 M3 x 10mm Screw	4	
12 Belt Pulley	1	
13 M5 Tee Nut	6	

Optional: NEMA 23 + hardware or Acme Nut block + hardware

Y Carriage (1)		
Part	Qty	Type
1 Y Axis Plate	1	3D or AI
2 NEMA 17	1	
3 Delrin Wheel	4	
4 Smooth Idler	2	3D
5 M5 x 30mm Low Profile Screw	6	
6 M5 Lock Nut	6	
7 Eccentric Spacer	2	
8 Aluminum Spacer 6mm	2	3D or AI
9 Idler Spacer	2	3D
10 M3 x 10mm Screw	4	
11 Belt Pulley	1	

Optional: NEMA 23 + hardware or Acme Nut block + hardware

Y Carriage (2)		
Part	Qty	Type
1 Y Axis Plate	1	3D or AI
2 NEMA 17	1	
3 Delrin Wheel	4	
4 Smooth Idler	2	3D
5 M5 x 30mm Low Profile Screw	6	
6 M5 Lock Nut	6	
7 Eccentric Spacer	2	
8 Aluminum Spacer 6mm	2	3D or AI
9 Idler Spacer	2	3D
10 M3 x 10mm Screw	4	
11 Belt Pulley	1	

Optional: NEMA 23 + hardware or Acme Nut block + hardware

Z Axis Assembly		
Part	Qty	Type
1 V Slot 20 x 40 x 8.5"	1	
2 8mm Rod x 8"	1	
3 NEMA 23	1	
4 8mm Acme Anti Backlash Nut Block	1	
5 Open Rail V Rail 8.5"	2	
6 Delrin Wheel	4	
7 NEMA 23 Coupler	1	
8 M5 x 30mm Low Profile Screw	8	
9 M5 Lock Nut	8	
10 Eccentric Spacer	2	
11 M5 x 15mm Low Profile Screw	2	
12 Spacer 5.635mm	2	3D
13 Spacer 11.635mm	2	3D
14 Z Axis Bottom Plate	1	3D or AI
15 Z Axis Top Plate	1	3D or AI
16 Self Tapping Screw	4	
17 M5 x 8mm Low Profile Screw	8	
18 M5 Tee Nut	8	
19 Z Axis Mounting Plate	1	3D or AI

Optional: NEMA 17 + hardware

Gantry Assembly		
Part	Qty	Type
1 X Carriage	1	Build
2 Y Carriage 1	1	Build
3 Y Carriage 2	1	Build
4 Z Axis Assembly	1	Build
5 V Slot 20 x 40 x 19.5"	2	
6 Self Tapping Screw	8	

Optional: NEMA 17 / 23 + hardware + mounts + threaded rods + couplers

Final Assembly		
Part	Qty	Type
1 Gantry Assembly	1	Build
2 V Slot 20 x 40 x 16"	2	
3 1020 x 24"	2	
4 MDF Base 17.925" x 16"	1	
5 Leg Brace	4	3D or AI
6 Self Tapping Screw	8	
7 1/4" Cap Screw	8	
8 1/4" Tee Nut	8	

Optional: NEMA 17 / 23 + hardware + mounts + threaded rods + couplers

Part	Qty	Qty Included	Cost Each	Total	Link	Purpose
1 X Axis Plate Front	1	1			DWG	
2 X Axis Plate Back	1	1			DWG	
3 Y Axis Plate	2	2			DWG	
4 Z Axis Bottom Plate	1	1		3D Print	STP	
5 Z Axis Top Plate	1	1			STP	
6 Leg Brace	4	4			DWG	
7 Z Axis Mounting Plate	1	1			DWG	
8 Delrin Wheel	20	5	\$ 6.99	\$ 27.96	<a href="https://www.amazon.com/B1QU-Double-V-Plastic-Passive-Bearing/dp/B01FJHSNOC/ref=sr_1_5?ie=UTF8&amp;qid=1549170704&amp;sr=8-5&amp;keywords=v+wheel">https://www.amazon.com/B1QU-Double-V-Plastic-Passive-Bearing/dp/B01FJHSNOC/ref=sr_1_5?ie=UTF8&amp;qid=1549170704&amp;sr=8-5&amp;keywords=v+wheel</a>	
9 M3 x 10mm Screw	12	100	\$ 2.76	\$ 5.52	<a href="https://www.mcmaster.com/#92005a120/=1az01p7">https://www.mcmaster.com/#92005a120/=1az01p7</a>	NEMA 17
10 M5 x 8mm Low Profile Screw	14	10	\$ 2.78	\$ 5.56		Rail + Z to X
11 M5 x 15mm Low Profile Screw	2	10	\$ 1.59	\$ 1.59	<a href="https://openbuildspartstore.com/low-profile-screws-m5-10-pack/">https://openbuildspartstore.com/low-profile-screws-m5-10-pack/</a>	Delrin Block
12 M5 x 30mm Low Profile Screw	20	10	\$ 1.89	\$ 3.78		NEMA 23, Wheels Assemblies
13 M5 x 55mm Low Profile Screw	4	10	\$ 2.39	\$ 2.39		
14 M5 Lock Nut	24	4	\$ 0.68	\$ 4.08	<a href="https://www.lowes.com/pd/Hillman-4-Count-5mm-Zinc-Plated-Metric-Nylon-Insert-Lock-Nuts/3012828">https://www.lowes.com/pd/Hillman-4-Count-5mm-Zinc-Plated-Metric-Nylon-Insert-Lock-Nuts/3012828</a>	
15 M5 Tee Nut	14	10	\$ 2.99	\$ 5.98	<a href="https://openbuildspartstore.com/tee-nuts-m5-10-pack/">https://openbuildspartstore.com/tee-nuts-m5-10-pack/</a>	
16 Eccentric Spacer 6mm	10	10	\$ 10.15	\$ 10.15	<a href="https://www.amazon.com/Eccentric-Spacers-Aluminium-Extrusion-Printer/dp/B07D36ZQG/ref=sr_1_1_sspa?ie=UTF8&amp;qid=1549170039&amp;sr=8-1-spons&amp;keywords=eccentric+spacer&amp;psc=1">https://www.amazon.com/Eccentric-Spacers-Aluminium-Extrusion-Printer/dp/B07D36ZQG/ref=sr_1_1_sspa?ie=UTF8&amp;qid=1549170039&amp;sr=8-1-spons&amp;keywords=eccentric+spacer&amp;psc=1</a>	
17 Aluminum Spacer 6mm	8	10	\$ 2.99	\$ 2.99	<a href="https://openbuildspartstore.com/aluminum-spacers-10-pack/">https://openbuildspartstore.com/aluminum-spacers-10-pack/</a>	
18 Spacer 5.635mm	2	2			STP	
19 Spacer 9.77mm	4	4			STP	
20 Spacer 11.635mm	2	2		3D Print	STP	
21 Idler Spacer	4	4			STP	
22 Smooth Idler	4	4			STP	
23 Belt Pulley	3	1	\$ 1.58	\$ 4.74	<a href="https://www.ebay.com/itm/2GT-GT2-Timing-Belt-Pulley-6mm-Width-5mm-Bore-16T-for-3D-printer-RepRap/253335991553?hash=item3afc007501:g:Y-oAAOSwevlaRmZ">https://www.ebay.com/itm/2GT-GT2-Timing-Belt-Pulley-6mm-Width-5mm-Bore-16T-for-3D-printer-RepRap/253335991553?hash=item3afc007501:g:Y-oAAOSwevlaRmZ</a>	
24 CNC Kit	1	1				
NEMA 17	3	3	\$ 52.00	\$ 52.00	<a href="http://www.ebay.com/itm/Arduino-CNC-Kit-w-UNO-Shield-Stepper-motors-DRV8825-Endstop-A4988-GRBL-/322011456404?hash=item4af960e394:g:uNcAAOSwZlIXSNE">http://www.ebay.com/itm/Arduino-CNC-Kit-w-UNO-Shield-Stepper-motors-DRV8825-Endstop-A4988-GRBL-/322011456404?hash=item4af960e394:g:uNcAAOSwZlIXSNE</a>	
Arduino Uno	1	1				
CNC Motor Shield and Drivers	1	1				
25 NEMA 23	1	1	\$ 29.00	\$ 29.00	<a href="https://www.amazon.com/gp/product/B01L3QVVG6/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B01L3QVVG6/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&amp;psc=1</a>	
26 NEMA 23 Coupler	1	1	\$ 3.38	\$ 3.38	<a href="https://www.amazon.com/uxcell-Coupling-L25xD14-Coupler-Connector/dp/B07PBBNS2B/ref=sr_1_9?keywords=6.35mm+to+8mm+coupler&amp;qid=1552530836&amp;s=hi&amp;sr=1-9">https://www.amazon.com/uxcell-Coupling-L25xD14-Coupler-Connector/dp/B07PBBNS2B/ref=sr_1_9?keywords=6.35mm+to+8mm+coupler&amp;qid=1552530836&amp;s=hi&amp;sr=1-9</a>	
27 8mm Rod x 8"	1	1	\$ 9.14	\$ 9.14	<a href="http://www.mcmaster.com/#1078N12">http://www.mcmaster.com/#1078N12</a>	
28 8mm Acme Anti Backlash Nut Block	1	1	\$ 9.99	\$ 9.99	<a href="https://openbuildspartstore.com/anti-backlash-nut-block-for-8mm-metric-acme-lead-screw/">https://openbuildspartstore.com/anti-backlash-nut-block-for-8mm-metric-acme-lead-screw/</a>	Each (mm)
29 Open Rail V Rail 8.5"	2	2	\$ 3.29	\$ 3.29	<a href="https://openbuildspartstore.com/openrail-linear-rail/">https://openbuildspartstore.com/openrail-linear-rail/</a>	Total (mm)
30 V Slot 20 x 40 x 8.5"	1	1	\$ 6.99	\$ 6.99		Stock Length (mm)
31 V Slot 20 x 40 x 16"	2	2	\$ 13.99	\$ 13.99		215.9
32 V Slot 20 x 40 x 19.5"	2	2	\$ 13.99	\$ 27.98	<a href="https://openbuildspartstore.com/v-slot-20x40-linear-rail/">https://openbuildspartstore.com/v-slot-20x40-linear-rail/</a>	431.8
33 Self Tapping Screw	20	1	\$ 0.29	\$ 5.80	<a href="https://openbuildspartstore.com/self-tapping-screw/">https://openbuildspartstore.com/self-tapping-screw/</a>	500
34 1020 x 24"	2	1	\$ 11.31	\$ 22.62	<a href="https://8020.net/shop/1020.html">https://8020.net/shop/1020.html</a>	215.9
35 MDF Base 17.925" x 16"	1	1	\$ 6.98	\$ 6.98	<a href="https://www.lowes.com/pd/Actual-0-5-in-x-2-ft-x-4-ft-Industrial-Particle-Board/1000154523">https://www.lowes.com/pd/Actual-0-5-in-x-2-ft-x-4-ft-Industrial-Particle-Board/1000154523</a>	215.9
36 1/4" Cap Screw	8	50	\$ 5.65	\$ 5.65	<a href="http://www.mcmaster.com/#92949A537">http://www.mcmaster.com/#92949A537</a>	406.4
37 1/4" Tee Nut	8	1	\$ 0.21	\$ 1.68	<a href="https://8020.net/3382.html">https://8020.net/3382.html</a>	812.8
38 Belt (>19.5", >16.5" x2)	3	1	\$ 8.38	\$ 8.38	<a href="https://www.amazon.com/gp/product/B00THZJNTJ/ref=oh_aui_detailpage_o02_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B00THZJNTJ/ref=oh_aui_detailpage_o02_s00?ie=UTF8&amp;psc=1</a>	1000
39 12V DC Fan	1	1	\$ 8.00	\$ 8.00	<a href="https://www.amazon.com/Generic-Inches-3-Pin-Connector-SF-8025-3P/dp/B005XQKHUY/ref=sr_1_15?ie=UTF8&amp;qid=1515252585&amp;sr=8-15&amp;keywords=3%22+computer+fan">https://www.amazon.com/Generic-Inches-3-Pin-Connector-SF-8025-3P/dp/B005XQKHUY/ref=sr_1_15?ie=UTF8&amp;qid=1515252585&amp;sr=8-15&amp;keywords=3%22+computer+fan</a>	495.3
40 24V to 12V Converter	1	1	\$ 9.79	\$ 9.79	<a href="https://www.amazon.com/gp/product/B00J3MHUWM/ref=ppx_yo_dt_b_asin_title_o03_s01?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B00J3MHUWM/ref=ppx_yo_dt_b_asin_title_o03_s01?ie=UTF8&amp;psc=1</a>	990.6
41 4 Pin Connector	4	5	\$ 9.88	\$ 9.88	<a href="https://www.amazon.com/gp/product/B01LCV8DXQ/ref=ppx_yo_dt_b_asin_title_o04_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B01LCV8DXQ/ref=ppx_yo_dt_b_asin_title_o04_s00?ie=UTF8&amp;psc=1</a>	
42 2 Pin Connector	1	5	\$ 8.88	\$ 8.88	<a href="https://www.amazon.com/gp/product/B01LCV8DXQ/ref=ppx_yo_dt_b_asin_title_o04_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B01LCV8DXQ/ref=ppx_yo_dt_b_asin_title_o04_s00?ie=UTF8&amp;psc=1</a>	
43 Power Port	2	2	\$ 8.99	\$ 8.99	<a href="https://www.amazon.com/gp/product/B07BNKDTWR/ref=ppx_yo_dt_b_asin_title_o04_s00?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B07BNKDTWR/ref=ppx_yo_dt_b_asin_title_o04_s00?ie=UTF8&amp;psc=1</a>	
44 Power Cable	2	2	\$ 8.99	\$ 8.99	<a href="https://www.amazon.com/gp/product/B00WA0VVQU/ref=ppx_yo_dt_b_asin_title_o04_s01?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B00WA0VVQU/ref=ppx_yo_dt_b_asin_title_o04_s01?ie=UTF8&amp;psc=1</a>	
45 Scrap Wood / Acrylic						
46 Z Axis Support 2	1	1		3D Print	STP	

Total \$ 322.15

Each (mm)	Total (mm)	Stock Length (mm)
215.9	431.8	500
215.9	215.9	500
406.4	812.8	1000
495.3	990.6	1000