-	Item	Source	Qty.	Unit Cost	Ext. Cost	Link	Comments	Additional Comments
a l	V Slot Extrusion	Open Builds Store	ζ.,.				Frame sized for 200x300mm bed and 325mm print height	OpenBuilds occasionally has free shipping weekends
Frame	- 20x20x1500mm	Open Builds Store	2	\$15.00	\$30.00	V Slot Linear Rail		
ق	- 20x40x1500mm	Open Builds Store	2	\$19.50		V Slot Linear Rail		
Œ	- 20x40x1000mm	Open Builds Store	2	\$13.00		V Slot Linear Rail		
	E3D v6 Hot End 1.75 w/ Bowden extras	Filastruder	1	\$78.89		1.75 E3D v6 w/bowden extras	E3Dv6 with bowden tube and coupling	For half the cost, E3D v6 lite would work well for PLA, PETG, ABS (any plastic below 245c)
	Nema 17 Stepper Motor	AutomationDirect	5	\$11.26		Stepper Motor		
	12V/30A Power Supply	Amazon	1	\$21.68		Power Supply		
	Ramps 1.4 Kit	Ebay	1	\$32.00		Ramps 1.4 kit		
	Heated Bed	Ebay	1	\$29.20		PCB Heated Bed	200mmx300mm (~8"x~12") 12v	This heated bed works for 60C but it has difficulty maintaining 100C. Consider alternative if printing ABS.
	Solid State DC Relay	Amazon	1	\$11.58		SSR DC DC Relay	Solid State AC relay will not work with a DC load	Don't confuse with the SS AC relay, they look similar, read the label
	100k 3950 Thermistor for bed	Ebay	1	\$1.00		3950 Thermistor	For heated bed temperature feedback	Alternate Thermistor 10pk
	Endstop 3 pack, v1.2	Ebay	1	\$4.49		Endstop Pack	3 pack	rateriate member 24ph
	40mm cooling fans	Amazon	2	\$2.04		40mm fan	Ducted print fan and Ramps board cooling	
	Alternate fan for E3Dv6 heatsink	Digi-key	1	52.04	Ş-4.00	30mm Fan	Optional, Alternate quieter fan for the E3D V6 heatsink	
- Б	2.54mm Connector kit	Ebay	1	\$3.00	ća nn	2.54 Connector Pins	For 1, 2, 3, 4 pin connections to Ramps board headers	Requires a crimping tool, or careful soldering of wire to each pin
.0	XH2.54 Connector Kit		1	\$3.00		XH2.54 4 Pin Connectors		Requires a crimping tool, or careful soldering of wire to each pin Requires a crimping tool, or careful soldering of wire to each pin
		Ebay				AH2.54 4 PIII Connectors	To plug into the three endstop jacks	14awg wire for heated bed and Ramps supply
2	Wire	Various	1	\$10.00	\$10.00	recommendate to the control of the	22awg wire for motors, endstops, fans, thermistors.	
<u></u>	Receptacle/Switch for 120v power	Amazon	1	\$4.05		IEC320 Male Jack with Switch	Optional, also needs a 5A fuse	5A Fuse
	12v 5050 LED Strip ~45"	Amazon	1	\$8.00		5m 5050 LED Strip	Optional	Optional controller w/ remote, LED strip can also be connected directly to 12v supply
	V-Slot Mini V Wheel	Open Builds Store	20	\$0.90		Mini V Wheel	Select the 20pk for a price break	
	MR105ZZ 5mmx10mmx4mm bearings	Ebay	40	\$0.38		Wheel Bearings 10pk	Need 40, order 4x 10pk	
	F623ZZ Flange Bearing 3x10x4mm	Ebay	16	\$0.79		Flanged Bearing	Need 16, order 2x 10pk	
.2	625ZZ Bearing	Ebay	1	\$1.98		625ZZ Bearing	For Extruder	
in i	8mm lead Screw, 400 mm	Ebay	2	\$13.23		<u>Lead Screw</u>	Comes with nut	
h	5mm x 8mm Flex Coupling	Ebay	2	\$2.50		Flex Coupling	Order 2pk	
	Kit, 2 GT2 Pulley and 2m GT2 belt	Ebay	1	\$11.99		<u>Pulleys and Belt</u>	Comes with (2) GT2 16t Pulley and (1) 2m GT2 Belt	
\sim	GT2 Belt, 2m	Ebay	1	\$8.00		GT2 Belt	GT2 belt cut to length, 2m (~7ft)	Total of 2x2m belts needed
Σ	1.75mm MK8 drive pulley	Ebay	1	\$2.29	\$2.29	1.75mm MK8 Pulley		
	Spring Kit	Hardware Store	1	\$2.00	\$2.00	Spring Kit	Four bed leveling springs and one extruder tensioner spring	
	Glass to match heated bed	Hardware Store	1	\$6.00	\$6.00		Size to fit onto the heated bed PCB	
	Binder clips	Desk Drawer	8	\$0.10		Binder Clips	Raid your local office supply cabinet or desk drawer	
	Thermal adhesive	Amazon	1	\$2.00	\$2.00	For heatsinks, thermistors		
	Rubber Feet	Amazon	4	\$0.50		Rubber Feet	Need 4, ordered 5pk	
Misc.	Insulation for bottom of bed	Amazon	1	\$2.00		Corkboard	Optional, Attach corkboard to bottom of heatbed with JBweld	
≝	Wire Spiral Wrap, 3m	Amazon	1	\$3.00		Wiring Tube	Optional, For wire management	
2	PLA Spool, 1kg	Amazon	1	\$22.98		Hatchbox 1.75mm Green	At least one spool is needed to print all parts	
	M3 Socket Bolt, 8mm	MrMetric	33	\$0.07		M3 x 8mm Bolt		
	M3 Socket Bolt, 10mm	MrMetric	9	\$0.07		M3 x 10mm Bolt		
	M3 Socket Bolt, 20mm	MrMetric	13	\$0.11		M3 x 20mm Bolt		
	M3 Socket Bolt, 25mm	MrMetric	15	\$0.18		M3 x 25mm Bolt		
	M3 Nut	MrMetric	32	\$0.02		M3 Nut		
	M3 Nyloc Nut	MrMetric	17	\$0.02		M3 Nylock Nut		
	M3 Washer	MrMetric	82	\$0.02		M3 Washer		
	M4 Bolt, 30mm	MrMetric	4	\$0.03		M4 x 30mm Bolt		
	M4 washer	MrMetric	4	\$0.14		M4 Washer		
		MrMetric	196	\$0.01		M5 x 10mm Bolt		
	M5 Socket Bolt, 10mm	MrMetric	196	\$0.08		M5 x 12mm Bolt		
	M5 Socket Bolt, 12mm M5 Socket Bolt, 20mm	MrMetric	1	\$0.17				
		MrMetric		\$0.14		M5 x 20mm Bolt		
	M5 Socket Bolt, 40mm		22			M5 x 40mm Bolt		
	M5 Socket Bolt, 75mm	MrMetric	1	\$0.46		M5 x 75mm Bolt		
	M5 Nut	MrMetric	9	\$0.03		M5 Nut		
S	M5 Nyloc Nut	MrMetric	14	\$0.07		M5 Nylock Nut		
	M5 Square Nut	MrMetric	185	\$0.04		M5 Square Nut	The equivalent amount of OpenBuilds T-nuts is \$40.	Square nuts are used instead because they are much cheaper and function nearly the same.
E	M5 Washer	MrMetric	205	\$0.01		M5 Washer		
	M5 Washer 15mm OD	MrMetric	2			M5 Washer 15mm OD		
				\$0.03			Outrood for control obligation	
	M5 Phillips Flathead Bolt, 8mm	MrMetric	2	\$0.16		M5 x 8mm Phillips Flathead	Optional, for printed cable chain ends	
	·	MrMetric	2	\$0.16	\$0.32	M5 x 8mm Phillips Flathead	Optional, for printed cable chain ends	
	M5 Phillips Flathead Bolt, 8mm See sheet two for hardware detail	MrMetric	2	\$0.16	\$0.32		Optional, for printed cable chain ends	
	·	MrMetric	2	\$0.16	\$0.32	M5 x 8mm Phillips Flathead	Optional, for printed cable chain ends	
	·	MrMetric	2	\$0.16	\$0.32	M5 x 8mm Phillips Flathead	Optional, for printed cable chain ends	
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	·	MrMetric	2	\$0.16	\$0.32	M5 x 8mm Phillips Flathead	Optional, for printed cable chain ends	
	See sheet two for hardware detail	MrMetric	2	\$0.16	\$0.32	M5 x 8mm Phillips Flathead	Optional, for printed cable chain ends	
	·	MrMetric	2	\$0.16	\$0.32	M5 x 8mm Phillips Flathead r extra if needed.	Optional, for printed cable chain ends	
	See sheet two for hardware detail	MrMetric	2	\$0.16	\$0.32	M5 x 8mm Phillips Flathead	Optional, for printed cable chain ends	
	See sheet two for hardware detail		2	\$0.16	\$0.32 quantities, orde	M5 x 8mm Phillips Flathead r extra if needed. Frame Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail		2	\$0.16	\$0.32 quantities, orde	M5 x 8mm Phillips Flathead r extra if needed.	Optional, for printed cable chain ends	
	See sheet two for hardware detail		2	\$0.16	\$0.32 quantities, order \$95.00 \$266.27	M5 x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail		2	\$0.16	\$0.32 quantities, order \$95.00 \$266.27	M5 x 8mm Phillips Flathead r extra if needed. Frame Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc.		2	\$0.16	\$0.32 quantities, order \$95.00 \$266.27	M5 x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail		2	\$0.16	\$0.32 quantities, order \$95.00 \$266.27 \$101.25	M5 x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc.		2	\$0.16	\$0.32 quantities, order \$95.00 \$266.27 \$101.25	M5 x 8mm Phillips Flathead r extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc.		2	\$0.16	\$95.00 \$95.00 \$266.27 \$101.25	M5 x 8mm Phillips Flathead r extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total Miscellaneous Parts Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc. Mechanical		2	\$0.16	\$95.00 \$95.00 \$266.27 \$101.25	M5 x 8mm Phillips Flathead r extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc. Mechanical	Frame	2	\$0.16	\$0.32 \$95.00 \$266.27 \$101.25 \$40.78	MS x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total Miscellaneous Parts Total Hardware Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc. Mechanical	Frame	2	\$0.16	\$0.32 \$95.00 \$266.27 \$101.25 \$40.78	M5 x 8mm Phillips Flathead r extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total Miscellaneous Parts Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc. Mechanical	Frame	2	\$0.16	\$0.32 \$95.00 \$266.27 \$101.25 \$40.78	MS x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total Miscellaneous Parts Total Hardware Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc. Mechanical	Frame	2	\$0.16	\$0.32 \$95.00 \$266.27 \$101.25 \$40.78	MS x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total Miscellaneous Parts Total Hardware Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc. Mechanical	Frame	2	\$0.16	\$0.32 \$95.00 \$266.27 \$101.25 \$40.78	MS x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total Miscellaneous Parts Total Hardware Total	Optional, for printed cable chain ends	
	See sheet two for hardware detail HW Misc. Mechanical	Frame	2	\$0.16	\$0.32 \$95.00 \$266.27 \$101.25 \$40.78	MS x 8mm Phillips Flathead or extra if needed. Frame Total Electrical Parts Total Mechanical Parts Total Miscellaneous Parts Total Hardware Total	Optional, for printed cable chain ends	

	Qty	Туре	Diameter	Length	Application Notes						
Frame	196	Bolt	M5	10mm	See subtotal box>		ic bolted to Vslot)				
	182	Square Nut	M5		Less 14 for M5 tapped mounts	50	3x3 Plates (5 Ea.)				
	179	Washer	M5		Less 17 for countersunk mounts	28	Corner brackets (2 Ea.)				
Wheel Axles	20	Bolt	M5	40mm		24	Rear XY Idlers (12 ea.)				
	12	Nyloc Nut	M5		H Bar Ends and print carrraige	20	X/Y Motor Mounts (10 Ea	a.)			
	8	Nut	M5		Z wheels	12	Z guides (3 Ea.)				
	24	Washer	M5		2 per axle, none on Z axles	12	Heated Bed Brackets (3 E	ia.)			
Extruder	1	Bolt	M5	40mm	Spring Loaded Flange	10	Miscellaneous/ Future				
	1	Bolt	M5	12mm	625zz Bearing Mount	8	Lead Screw Brackets (4 E	a.)			
	1	Nut	M5		Spring Loaded Flange	8	H Bar Ends (4 Ea.)				
	1	Nylock Nut	M5		625zz Bearing Mount	8	Z motor mounts (4 ea.)				
	2	Washer	M5		Spring Loaded Flange	6	End stop mounting (2 Ea	.)			
Cable Chain	2	Bolt, Phillips Flat	M5	8mm	Cable chain ends	6	2x1 Plates (3 ea.)				
	2	Square Nut	M5			2	Power Switch Mount				
Spool Holder	1	Bolt	M5	75mm	Sized for 1kg spool	2	Extruder				
	1	Square Nut	M5			196	Subtotal				
	1	Nylock Nut	M5								
	2	Washer 15mm OD	M5								
Endstops	1	Bolt	M5	40mm	Z actuator						
Enustops	1	Bolt	M5	20mm	Y actuator	Total Require	ed Hardware Quantities				
	1	Bolt	M3	25mm	X actuator	Qty	Type	Diameter	Length		
	6	Bolt	M3	8mm	Endstop Mounting	33	Bolt	M3	8mm		
	6	Nut	M3	OIIIIII	Enastop Mounting	9	Bolt	M3	10mm		
	10	Washer	M3		6 for X, 2 for Y, 2 for Z	13	Bolt	M3	20mm		
.,,			M3	25	6 101 A, 2 101 1, 2 101 2						
Idler Bearings	8	Bolt		25mm	II Day Cad idlay	15	Bolt	M3	25mm		
	4	Nyloc Nut	M3 M3		H Bar End idlers	32 17	Nut	M3			
	4 16	Nut			Rear XY idlers	82	Nyloc Nut	M3			
		Washer	M3		For H Bar idlers/ in between flanged bearings	82	Washer	M3			
Print Carriage	6	Bolt	M3	8mm	Hot end clamp top, two tubing holders		- ti				
	8	Bolt	M3	10mm	Belt Clamps	4	Bolt	M4	30mm		
	2	Bolt	M3	25mm	Hot End Clamp bottom	4	Washer	M4			
	16	Nut	M3								
	16	Washer	M3			2	Bolt, Phillips Flat	M5	8mm		
Print bed	4	Bolt	M3	25mm	Bed leveling	196	Bolt	M5	10mm		
	8	Bolt	M3	20mm	Lead Screw Nut Mounts	1	Bolt	M5	12mm		
	4	Nut	M3		Bed leveling	1	Bolt	M5	20mm		
	8	Nyloc Nut	M3		Lead Screw Nut Mount	22	Bolt	M5	40mm		
	16	Washer	M3		Bed leveling, lead screw mounts	1	Bolt	M5	75mm		
Motor Mounts	19	Bolt	M3	8mm		9	Nut	M5			
	1	Bolt	M3	10mm	Extruder tensioner flange hole	14	Nyloc Nut	M5			
	16	Washer	M3		Extruder motor bolts do not need washers	185	Square Nut	M5			
Print Fan	5	Bolt	M3	20mm	Fan to duct mounting, Fan Swivel	205	Washer	M5			
	2	Bolt	M3	8mm	Mount to print carriage	2	Washer 15mm OD	M5			
	2	Nut	M3		Mount to print carriage						
	5	Nylock Nut	M3		Fan Mounting, Fan Swivel	These are all	minimum quantities, orde	er extra hardw	are if you like	to have spares	
	8	Washer	M3								
Power Supply	4	Bolt	M4	30mm	Power Supply Clamps						
	4	Washer	M4								