

Category	CAD Model Name	Part #	Part Name	QTY	Unit Cost	Total Cost	Vendor	Vendor Part # or ID	Description	Links	Notes
Barrel	Sheen_screw-1	1	Screw	1	\$250.00	\$250.00	Zhoushan Sheen Machinery Co Ltd		L:D Ratio = 30:1 Compression Ratio = 2:1	http://www.xrscREW.com	
Barrel	Sheen_barrel-1	2	Barrel	1	\$250.00	\$250.00	Zhoushan Sheen Machinery Co Ltd		38CrMoALA steel alloy Barrel	http://www.xrscREW.com	
Barrel	DieHolder2-1	3	Die Adapter	1	\$50.00	\$50.00	UBC		Steel threaded adapter to connect die pieces		Machined at UBC
Barrel	Breakerplate	4	Breaker Plate	1	\$25.00	\$25.00	UBC		20mm disc with holes punched through, stops unwanted particles		Machined at UBC
Barrel	Die-1	5	Die	1	\$25.00	\$25.00	UBC		Steel die end		Water jet cut
	Hopper	6	Hopper	1	\$5.00	\$5.00			Plastic hopper for feed		3d printed
Drive	Motor_Nema-56C-1	7	Motor	1	\$175.00	\$175.00	Automation Direct	MTPM-P50-1L18	0.5HP 90V DC motor	www.automationdirect.com	
Electrical		8	DC drive	1	\$135.00	\$135.00	Automation Direct	GSD5-240-10C	Drive to power 0.5HP DC motor	www.automationdirect.com	
Drive	Gearbox_RA-1	9	Gear Box	1	\$110.00	\$110.00	Princess Auto Ltd	8494155	30:1 Horizontal shaft worm gear	www.princessauto.com	
Heating	BandHeater	10	Mica Heater Band	3	\$100.00	\$300.00	Zesta engineering		2.75"ID x 2.5"Width 115V 200W	www.zesta.com	
Heating	CoolingFan	11	Blower	2	\$75.00	\$150.00	Auklands Grainger	GGE1TDP2	115V, 104CFM Free air blower	www.auklandsgrainger.com	
Electrical		12	Thermocouple	3	\$22.50	\$67.50	Automation Direct	THMJ-D08L10-02	Type J Thermocouple	www.automationdirect.com	
Electrical		13	Thermocouple Adapter	3	\$1.25	\$3.75	Automation Direct	BA-078	connects thermocouple to barrel	www.automationdirect.com	
Electrical		14	Temperature Controllers	3	\$100.00	\$300.00	Automation Direct	SL4848-VV	Temperature controllers with 2 output options to simultaneously control heating and cooling	www.automationdirect.com	
Electrical		15	Solid State Relays	5	\$17.50	\$87.50	Automation Direct	AD-SSR625-DC-280A		www.automationdirect.com	
Electrical		16	Electrical Enclosure	1	\$50.00	\$50.00	Nedco		NEMA 1, 16"X16"X8" enclosure		
Frame	Frame	17	Aluminum Extrusion Nuts	20	\$0.25	\$5.00	Misumi USA INC	HNTJ5-5	Nuts for aluminum frame	www.misumiusa.com	
Frame	Frame	18	1050mm Aluminum Extrusion	2	\$13.23	\$26.46	Misumi USA INC	HFS5-2525-1050	1050mm	www.misumiusa.com	
Frame	Frame	19	265mm Aluminum Extrusion	4	\$3.44	\$13.76	Misumi USA INC	HFS5-2525-265	265mm	www.misumiusa.com	
Frame	Frame	20	240mm Aluminum Extrusion	2	\$3.44	\$6.88	Misumi USA INC	HFS5-2525-240	240mm	www.misumiusa.com	
Frame	Frame	21	160mm Aluminum Extrusion	2	\$3.44	\$6.88	Misumi USA INC	HFS5-2525-160	160mm	www.misumiusa.com	

Frame	Frame	22	90mm Aluminum Extrusion	10	\$3.44	\$34.40	Misumi USA INC	HFS5-2525-90	90mm	www.misumiusa.com	
Frame	chblfsn5	23	Reversal Tabbed Bracket	6	\$1.37	\$8.22	Misumi USA INC	CHBLFSN5-SET	Reversal Bracket with tab	www.misumiusa.com	
Frame	hfc5_2525_b_2_03	24	Frame End Caps	10	\$1.49	\$14.90	Misumi USA INC	HFC5-2525-B	Caps for protecting frame end faces	www.misumiusa.com	
Frame	HPTTS5	25	T shaped brackets	12	\$3.00	\$36.00	Misumi USA INC	HPTTS5-SET	Connecting frame extrusions	www.misumiusa.com	
Frame	hptls5_set_2_03	26	L shaped brackets	4	\$2.95	\$11.80	Misumi USA INC	HPTLS5-SET	Connecting frame extrusions	www.misumiusa.com	
Frame	hblfssw5_set_2_03	27	Reversal Tabbed Bracket #2	4	\$3.43	\$13.72	Misumi USA INC	HBLFSSW5-SET	Reversal Bracket with tab	www.misumiusa.com	
flexible coupler	Coupler	28	Rubber Center	1	\$23.97	\$23.97	McMaster-Carr	6507K73	Rubber center for 4"OD heavy Duty shaft coupling	www.mcmaster.com	
Flexible coupler	6507K442	29	Shaft Coupling Hub	1	\$25.15	\$25.15	McMaster-Carr	6507K64	Hub, 3-5/16"length, 4"OD, 3/4" shaft diameter	www.mcmaster.com	
Flexible coupler	6507K444	30	Shaft Coupling Hub	1	\$25.15	\$25.15	McMaster-Carr	6507K64	Hub, 3-5/16" length, 4"OD, 1" Shaft Diameter	www.mcmaster.com	
Rigid Coupler		31	Shaft Coupling	1	\$15.55	\$15.55	McMaster-Carr	6412K42	Rigid shaft coupling with keyway 5/8" Shaft Diameter	www.mcmaster.com	
Drive	9951K390	32	Shaft Collar	1	\$9.91	\$9.91	McMaster-Carr	9951k39	3/4"Shaft Dia, 2"OD, 5/8"Width	www.mcmaster.com	
Drive	BEARING	33	Bearing	1	\$10.49	\$10.49	Motion Industries	LM11949 CONE	single cone bearing	www.motionindustries.com	
Barrel Support	Flange mate	34	Flange Mate	1	\$15.00	\$15.00	UBC		210mm Diamter disc		Machined at UBC water jet
Barrel Support	Main Bracket	35	Main Bracket	1	\$20.00	\$20.00	UBC		Barrel support parts		Machined at UBC water jet
Barrel Support	Bearing Backing Plate	36	Bearing Backing Plate	1	\$5.00	\$5.00	UBC		Barrel support parts		Machined at UBC water jet
Barrel Support	Support Stands	37	Support Stands	2	\$15.00	\$30.00	UBC		Barrel support parts		Machined at UBC water jet
Barrel Support	Spacer	38	Spacer	6	\$1.00	\$6.00	UBC		Barrel support parts		Machined at UBC
Frame	Spacer_Motor_Stand	39	Motor Spacer	4	\$2.00	\$8.00	UBC		Cylinder Spacers for motor		Machined at UBC
Frame	Spacer_GearBox	40	Gear Box Spacer	1	\$2.00	\$2.00	UBC		Spacer		Machined at UBC
Frame	Spacer_Motor	41	Motor Spacer Block	1	\$2.00	\$2.00	UBC		Spacer		Machined at UBC
Frame	ScrewCase	42	Screw Case	1	\$2.00	\$2.00	UBC		Sheet metal Cover		Machined at UBC
Electrical		43	Power cord	1	\$15.70	\$15.70	Grainger	5XFL9	14gauge, 15A, 10ft,5-15p	http://www.grainger.com/	
Electrical		44	terminal strip	2	\$9.52	\$19.04	Grainger	6YH65		http://www.grainger.com/	
Electrical		45	SPST toggle switch	5	\$5.48	\$27.40	Grainger	2X464		http://www.grainger.com/	
Electrical		46	Fuse holder	9		\$0.00	Omega	OMTBV7-WFB	5x20mm DIN rail mounted fuse terminal block	http://www.omega.com/	
Electrical		47	Indicator lamp	4	\$2.50	\$10.00	Newark	18M7906	125V indicating lights	http://www.newark.com	
Electrical		48	Terminal block	13	\$1.90	\$24.70	Think Allied	70169256	1in 2out spring clamp terminal blocks	http://ca-en.alliedelec.com/	

Electrical		49	armor cable clamps	3	\$1.50	\$4.50	Gescan	GES12FXCN	1/2in screw connector	http://www.gescan.com	
Electrical		50	Din rail bracket	1	\$7.47	\$7.47	Grainger	4TFR2	10.00in x 1.38in	http://www.grainger.com/	
Electrical		51	fuses	9	\$1.50	\$13.50			1x15A Fast, 3x0.25A Fast, 5x2A slow		
Electrical		52	Fan cord	2	\$8.09	\$16.18	Grainger	5XFP2	18 gauge, 10A, 10ft	http://www.grainger.com/	
Bolts		53	M5x8mm screw	20	\$0.47	\$9.40			M5x8mm socket head cap screw		
Bolts		54	M5x35mm Screw	4	\$0.46	1.84			M5x35mm socket head cap screw		
Bolts		55	M8x30mm Screw	4	\$4.58	\$18.32					
Bolts		56	M6x15mm Screw	4	\$4.31	\$17.24			M6x15mm socket head cap screw		
Bolts		57	M12x70mm Screw	6	\$2.12	\$12.72			M12x70mm Hex cap screw		
Bolts		58	M5x20mm Screw	4	\$0.40	\$1.60			M5x20mm Socket head cap screw		
Bolts		59	M5x15mm Screw	10	\$0.30	\$3.00			M5x14mm socket head cap screw		
Nuts		60	M12x1.75	6	\$2.30	\$13.80			M12x1.75 Hex nut		
Nuts		61	M8x1.25	4	\$1.19	\$4.76			M8x1.25 Hex nut		
Nuts		62	M5x0.8	10	\$0.50	\$5.00			M5x0.8 Hex Nut		
Electrical		63	Miscellaneous			\$25.00					items not listed include, connectors, compression rings, spade terminals, 14gauge/18gauge wire
Total Cost					\$2,613.16						
*Cost does not include shipping and or taxes											