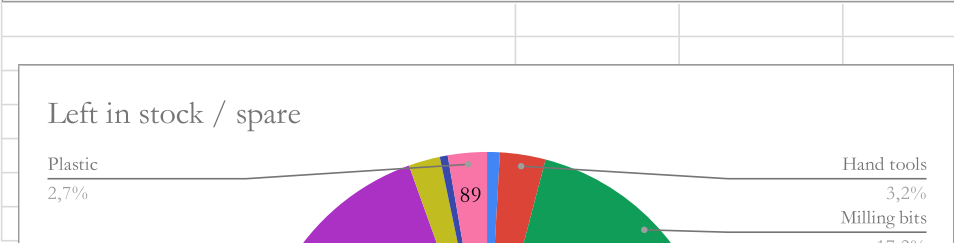
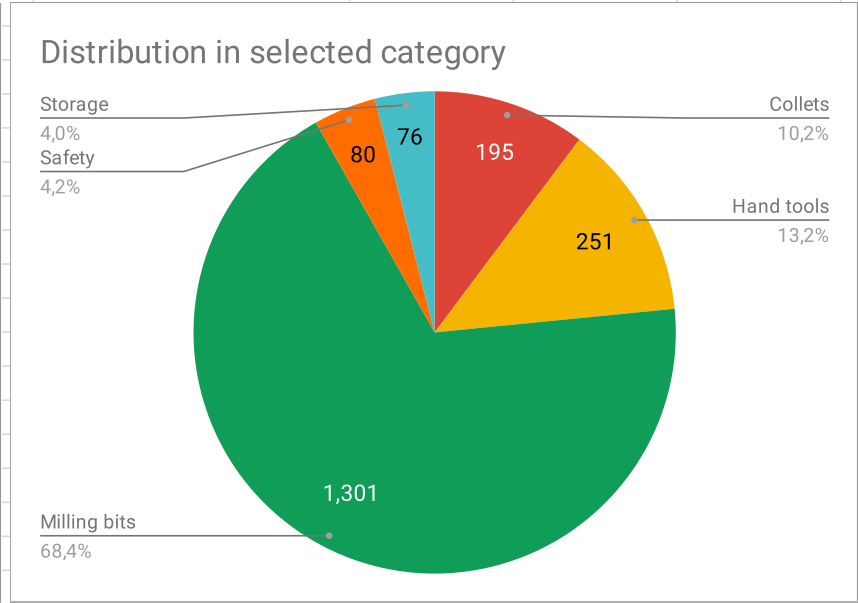
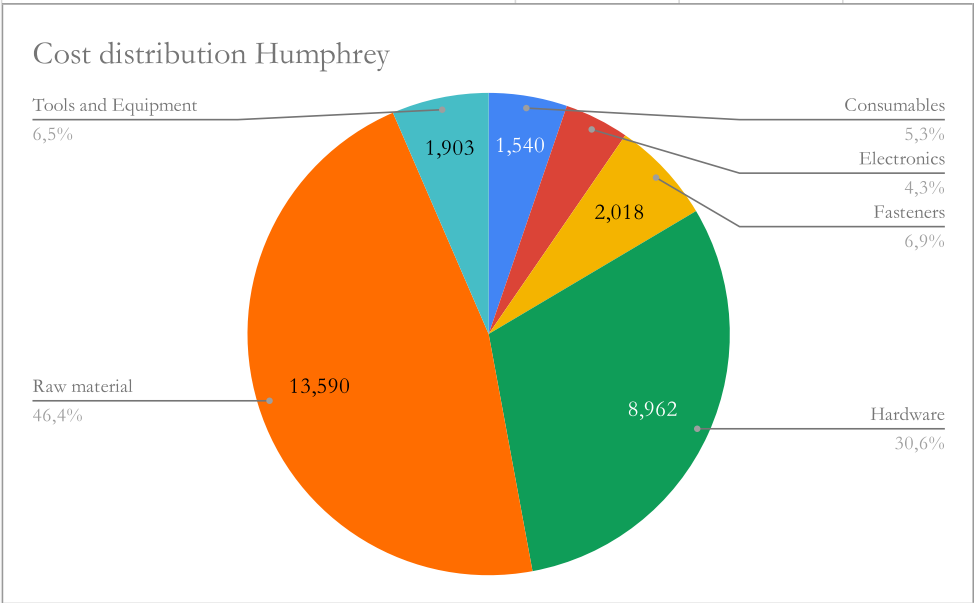
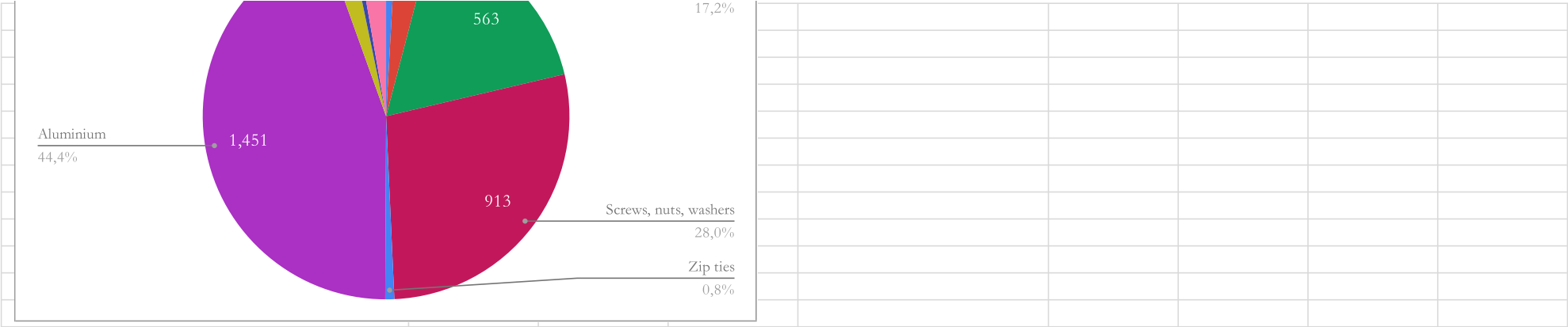


Category	NOK	USD	Display sub category				
Total costs for parts, materials and equipment:	29 281 kr	\$3 404	Tools and Equipment				
Spare / Left in stock after delivery	3 265 kr	\$380					
Category	NOK	USD	Sub category	NOK			
Consumables	1 540 kr	\$179	Collets	195			
Electronics	1 268 kr	\$147	Hand tools	251			
Fasteners	2 018 kr	\$235	Milling bits	1301			
Hardware	8 962 kr	\$1 042	Safety equipment	80			
Raw material	13 590 kr	\$1 580	Storage	76			
Tools and Equipment	1 903 kr	\$221					
Charts in NOK							





Material	Category	Sub category	Quantity	Remain Unit	Comment	Unit	Price	Price total	Current USD	Calci	NOK	tot RouN	NOK in stock after	Recommended sup	All Price total in Alt Currency	Alternative supplier
Drill bit, 4,5 mm diameter	Consumables	Drill bits	1	0	Of	For drilling aluminium with cordless drill	37,90	37,90 USD	\$41,00	38	0	0	0	0	https://www.diaclashion.com/no/Bosch-HSS-G-metalbor40-9203-130	
Drill bit, 3 mm diameter	Consumables	Drill bits	1	0	Of	For pre drilling wood with cordless drill	19,92	19,92 NOK	\$22,20	20	0	0	0	0	https://www.diaclashion.com/no/Bosch-tesbor40-9217-30	
Threading drill bit, spiral flute M5	Consumables	Drill bits	1	1	Of	For threading aluminium with cordless drill. All alternativt fins	1,09	1,09 USD	\$1,09	9	0	0	0	0	https://www.alexpressj	https://netfbtbutikk.wuerth.no/boring-gjenjeng-kapping-og-sliping/gjenjeng/maskingjenjengetape-hss-e-din-for-staal-bunnflut
Sanding sponge	Consumables	Hand tools	2	1	Of	For edge breaking the aluminium parts	47,92	95,84 NOK	\$11,14	96	0	0	0	0	https://www.diaclashion.com/no/Bosch-fin-slipesvamp-40-9311-220	
Cutting oil (vaseline)	Consumables	Lubricant	1	0	Of	For drilling and threading with cordless drill	49,00	49,00 NOK	\$5,70	49	0	0	0	0	https://www.vita.no/kløver-vaselin-40-g	
Milling bits 1 mm	Consumables	Milling bits	1	1	Of	1 for pinion teeth	380,43	380,43 NOK	\$44,22	380	0	0	0	0	http://YHF.de	
Milling bits 3 mm	Consumables	Milling bits	1	0	Of	1 for rack teeth	257,00	257,00 NOK	\$29,87	257	0	0	0	0	http://YHF.de	
Milling bits 4 mm	Consumables	Milling bits	1	0	Of	Aspect 1-2 used in production, they must be ALU compatible	257,00	257,00 NOK	\$29,87	257	0	0	0	0	http://YHF.de	https://www.alexpress.com/store/product/HJHAO-1pc-6mm-Single-Flute-Spiral-Cutter-3A-TOP-Qualit-CNC-Router-bits-for-wood-Acrylic/2947084_-32803524882.html
Milling bits 3mm cutting M5	Consumables	Milling bits	1	0	Of	For threading aluminium with CNC	29,19	19,19 USD	\$29,19	251	0	0	0	0	https://www.alexpressj	https://netfbtbutikk.wuerth.no/boring-gjenjeng-kapping-og-sliping/gjenjeng/maskingjenjengetape-hss-e-din-for-staal-bunnflut
Milling bits 4 mm	Consumables	Milling bits	1	1	Of	Exspct 2-3 used in production they must be ALU compatible	171,00	171,00 USD	\$19,88	171	0	0	0	0	http://YHF.de	https://www.alexpress.com/store/product/HJHAO-1pc-6mm-Single-Flute-Spiral-Cutter-3A-TOP-Qualit-CNC-Router-bits-for-wood-Acrylic/2947084_-32803524882.html
Vbit (1 flute if possible)	Consumables	Milling bits	1	1	Of	For edge braking	1,35	1,35 USD	\$1,35	12	0	0	0	0	https://www.alexpress.com/item/GERY60-120-Degree-3D-V-Type-Cutter-V-Groove-Bits-Engraving-Tools-For-Engraving-Machine/32824352757.htm?spm=a2g0s.9042311.0.0.274264cdkdr9	
Shedded Spindle cable 4 way	Electronics	Cable	3	0	m	Can be bought at Fellesverkstedet	46,45	139,35 NOK	\$16,20	139	0	0	0	0	http://no.farnell.com/aspo-kabel/0036425/cable-vlfss-serco-4c-15mm-per/d/1286044	
Ribbon cable 8 way max AWG20	Electronics	Cable	7,5	0	m	Cut in 5 of 1,5 m lengths (Can be bought at Fellesverkstedet)	1,47	11,00 GBP	\$14,24	123	0	0	0	0	http://uk.farnell.com/pro-power/pp001508/ribbon-cable-10core-20awg-300vd/d/2776633	
USB cable (USB-A to USB-B Mini 5	Electronics	Cable	1	0	m	5 m cable For controlling the machine via computer	103,92	103,92 NOK	\$12,08	104	0	0	0	0	https://www.kjell.com/no/produttore/data-og-nettverk/kabler-og-adaptore/usb/usb-kabler/mini-usb-kabel-svart-5-m-p86820	
Flexible power cable 220V	Electronics	Cable	10	0	m	For powering the machine wire via emergency stop	9,52	95,20 NOK	\$11,07	95	0	0	0	0	https://www.biltema.no/byggjoginstallasjon/installasjonskabler/gummkabel-2000018917	
Cable for probe, single wire	Electronics	Cable	8	0	m		1,92	15,36 NOK	\$1,79	15	0	0	0	0	https://www.diaclashion.com/no/FKUX-Enkelleder49-126-10	
EU Power plug (for wall socket) 2x2	Electronics	Connectors	1	0	Of		16,00	16,00 NOK	\$1,86	16	0	0	0	0	https://www.biltema.no/byggjoginstallasjon/stopper/bordet-stopset-2000017391	
PCB, Connectors and SMD compo	Electronics	Controller	1	0	BOM	See separate PCB BOM list for details	310,00	310,00 NOK	\$36,03	310	0	0	0	0		
Arduino NANO	Electronics	Controller	1	0	Of	Microcontroller board	279,20	279,20 NOK	\$32,45	279	0	0	0	0	https://www.digimall.no/no/produkt/1270872/cyduino-nano-atmega328-digital-i-pins-146-ewm	
Inductive proximity limit switch	Electronics	Sensors	3	0	Of	Comes in packs of 10 at	3,25	9,74 USD	\$9,74	84	0	0	0	0	https://www.alexpress.com/store/product/19DC-Inductive-Proximity-Sensor-SN04-N-three-wire-IPN-normally-open/Waterproof/907217_1939241212.htm?spm=a2114.12010612.0.0.43e25e6d4bTt	
Emergency stop, 220V10A	Electronics	Switches	2	0	Of	Needs to cut two conductors (2NC) Linked does not!	6,00	12,00 USD	\$12,00	103	0	0	0	0	https://www.alexpress.com/item/AC-660V-10A-Plastic-Red-Stop-Emergency-Stop-Multiround-Push-Button-Switch/32650634753.html	
Wood glue	Fasteners	Glue	1	0	Of	1 bottle is enough for table and spoonboard	81,76	81,76 NOK	\$9,50	82	0	0	0	0	https://netfbtbutikk.wuerth.no/kjemi-2/lign/trelim/	
Magnets	Fasteners	Magnets	6	0	Of	For the dust skirt comes in packs of 6	13,17	79,00 NOK	\$9,18	79	0	0	0	0	https://www.kjell.com/no/produttore/hjem-kontor-frikid/jadgata/magnetter-6-pk-p-50071	
Wood Screws, Machine screws, nut	Fasteners	Screws, nuts, washers	1	0,5	BOM	See separate fasteners BOM list for details	1.825,00	1.825,00 NOK	\$212,13	1.825	0	0	0	0	https://netfbtbutikk.wuerth.no	
Cable ties	Fasteners	Zip ties	100	80	Of	For organizing cables	0,32	31,92 NOK	\$3,71	32	0	0	0	0	https://www.diaclashion.com/no/Buntep-C33A5Nd-hvite-100-pack/22-515-2	
Bearings 608 8x22x7mm	Hardware	Bearings	40	0	Of	36 needed 4 spares for client	14,43	57,00 GBP	\$73,77	635	0	0	0	0	https://www.bearing-king.co.uk/bearings/608-2rs-abc3-r28-ball-sealed-skateboard-bearing-8x22x7mm/16848	
Drag chain for cable management	Hardware	Cable management	3	0	m		1,50	45,00 USD	\$45,00	387	0	0	0	0	https://www.alexpress.com/item/15mm-x-30mm-R28-Plastic-Cable-Drag-Chain-Wire-Carrier-with-End-Connector-Length-1m-for/24787359907.htm?spm=a2g0s.9042311.0.0.23514648RTCq	
Closed loop stepper motors 32mm w	Hardware	Motors & drivers	4	0	Of	Ip66	105,00	420,00 USD	\$420,00	3.613	0	0	0	0	https://www.alexpress.com/item/NeM4K24-3Nm-4250-in-Integrated-Closed-Loop-Stepper-Motor-with-driver-36VDC-IMC-HSS860-36-3032713260490.htm	
Power Supply 220V out 36V	Hardware	Power supply	1	0	Of		38,66	38,66 USD	\$38,66	337	0	0	0	0	https://www.alexpress.com/item/NeM4K24-3Nm-4250-in-Integrated-Closed-Loop-Stepper-Motor-with-driver-36VDC-IMC-HSS860-36-3032713260490.htm	
Variable Frequency Drive 1,5kW 21	Hardware	Hardware & driver	1	0	Of	ip66 recommended! Cheaper must be dust protected	225,90	225,90 USD	\$305,31	2.627	0	0	0	0	https://www.alexpress.com/item/NeM4K24-3Nm-4250-in-Integrated-Closed-Loop-Stepper-Motor-with-driver-36VDC-IMC-HSS860-36-3032713260490.htm	
Spindle 800w 24000rpm	Hardware	Spindle & driver	1	0	Of	Ip66	158,92	158,92 USD	\$158,92	1.367	0	0	0	0	https://www.alexpress.com/item/Square-6-8KW-Air-cooled-Spindle-motor-ER11-24000rpm-400Hz-ENGRAVING-MILLING-GRIND-6-SA2685467318.html	
Aluminium 6082-T6 2000x80mm	Raw material	Aluminium	18	4,18	m	Can be much cheaper with discounts	347,17	6.428,98 NOK	\$726,34	6.249	0	0	0	0	https://kundeportal.asiap.no/aluminiumprodukt/behaltende/line-av-8082	
Elastic cord for suspending spindle	Raw material	Elastic cord	10	9	m	10 m per package.	8,00	80,00 NOK	\$9,30	80	0	0	0	0	https://www.diaclashion.com/no/Elastisk-gummibånd-C33A5Nd40-8917	
Felt cloth, for vipers	Raw material	Leather and cord	0,4	0,35	m	400 mm long in the stiffer cloth direction.	50,00	20,00 NOK	\$2,32	20	0	0	0	0	https://www.stoffgigil.no/	
Leather for dust skirt	Raw material	Leather and cloth	0,07	0	m*2	Approx price	20,72	1,45 NOK	\$0,17	1	0	0	0	0	https://www.ladecider.se/farnell-mellan-brun-hal	
PLA filament for 3d-prints	Raw material	Plastic	1	0,75	Of	Full roll of filament	119,20	119,20 NOK	\$13,86	119	0	0	0	0	https://www.diaclashion.com/no/Filament-PLA-BI-3D-skriver-Flashforge/38-7721-2	
POM 12,6 mm	Raw material	Plastic	0,02	0	m*2	Can be bought at Fellesverkstedet	1.758,00	35,16 NOK	\$4,09	35	0	0	0	0		

Fastener description	Quantity needed	Total qty	Packs	Quantity in pack	Price pack	Tot price	Wurth Nr	Clas nr	Value of leftovers	Comment
M5 nut	14	25	1	25	19,92	19,92		11-503-5	8,76	
M6 nut	8	25	1	25	19,92	19,92		11-503-6	13,55	Can be any head
M8 nut	6	25	1	25	19,92	19,92		11-503-8	15,14	
4x40 wood screws	20	50	1	50	19,92	19,92		40-9566-13	11,95	
M4 washer	25	25	1	25	23,92	23,92		11-1203-4	0,00	
M6x20 cyl head	8	10	1	10	35,92	35,92		11-1133-620	7,18	Rustfri A4, reg is cheaper
6 mm Wood dowels	16	200	1	200	35,92	35,92		40-9483	33,05	
4x16wood screw	29	30	3	10	19,92	59,76		11-1412-3	1,99	
M5x20_cyl head	16	100	1	100	73,00	73	00575 20 005 100		61,32	
M8 large washer	12	20	2	10	39,90	79,8		11-1130-842	31,92	
M5x20 conic sunk head	36	100	1	100	113,59	113,59	00845 20 005 100		72,70	Stainless, cheaper if found regular
M5 stud screw	12	200	1	200	132,00	132	02545 10 005 200		124,08	
M5x20 hex head	36	100	1	100	179,00	179	20945 20 005 100		114,56	
M5x16_cyl head	180	200	1	200	192,00	192	00845 16 005 100		19,20	
M5 large washer	168	400	2	200	103,08	206,16	04115 15 005 100		119,57	
M5x35 cyl head	44	100	1	100	271,24	271,24	009705 35 005 100		151,89	
5x50 wood screw flat neck	214	250	1	250	343,21	343,21	017015050 008 250		49,42	
	844	1860			1642,38	1825,2			836,29	

Where	Centers	Excenters	tot
X axis	6	6	12
z axis	6	6	12
y axis 1	2	4	6
y axis 2	2	4	6
Spares	4	4	8
Needed	20	24	

Assembly	Fastener type	Needed	SUMIF	ISFIRST	Comment
Munt VFD	4x16wood screw	4	29	1	
Legs to underside	4x40 wood screws	20	20	1	
Torsion box	5x50 wood screw flat neck	130	214	1	
Legs	5x50 wood screw flat neck	48	214	2	
Munt VFD pads	5x50 wood screw flat neck	4	214	3	
Z-probe	5x50 wood screw flat neck	4	214	4	
Spoilboard	5x50 wood screw flat neck	28	214	5	
legs to box, top sheet to top	6 mm Wood dowels	16	16	1	
Motors plates to Axis plates	M5 large washer	16	168	1	
Bearings	M5 large washer	108	168	2	
Y rails to nuts	M5 large washer	44	168	3	
Gantry feet, both	M5x16_cyl head	20	180	1	
Y-sole	M5x16_cyl head	24	180	2	
Soles to feet	M5x16_cyl head	8	180	3	
Gantry ribs, top and bottom	M5x16_cyl head	20	180	4	
attach both feet to gantry	M5x16_cyl head	12	180	5	
X-axis to gantry	M5x16_cyl head	26	180	6	
Lids and backside to gantry	M5x16_cyl head	20	180	7	
xaxis plate and sensor holder	M5x16_cyl head	8	180	8	
Zaxis plate, sensor holder and chair	M5x16_cyl head	14	180	9	
Z to X axis plate	M5x16_cyl head	4	180	10	
Motors plates to Axis plates	M5x16_cyl head	16	180	11	
Mount echains	M5x16_cyl head	8	180	12	
Motor spacer and plate	M5x20_cyl head	16	16	1	
Moving bearings	M5x20 conic sunk head	36	36	1	Can be 25 mm
Fixed bearings	M5x20 hex head	36	36	1	Can be 25 mm
Y rails to nuts	M5x35 cyl head	44	44	1	
Spindle to z axis	M6x20 cyl head	8	8	1	
Spindle to z axis	M6 nut	8	8	1	

Endstops spacers	M5 nut	14	14	1	
leg feet	M8 large washer	6	12	1	
Feet topside nuts to stablice	M8 large washer	6	12	2	
Feet topside nuts to stablice	M8 nut	6	6	1	
Fasten leather to dust shoe	4x16wood screw	25	29	2	
Fasten leather to dust shoe	M4 washer	25	25	1	
Fasten pinions	M5 stud screw	12	12	1	

As of 22/01/2019	
Currency	In USD
NOK	0,116234
GBP	1,294255
USD	1
Currency	In NOK
USD	8,60333465
GBP	11,1349089
NOK	1

Tools and Equip	Collets	195 kr	
Tools and Equip	Hand tools	85 kr	
Tools and Equip	Hand tools	40 kr	
Tools and Equip	Hand tools	34 kr	
Tools and Equip	Hand tools	34 kr	
Tools and Equip	Hand tools	34 kr	
Tools and Equip	Hand tools	24 kr	
Tools and Equip	Milling bits	771 kr	
Tools and Equip	Milling bits	513 kr	
Tools and Equip	Milling bits	17 kr	
Tools and Equip	Safety equipment	40 kr	
Tools and Equip	Safety equipment	40 kr	
Tools and Equip	Storage	40 kr	
Tools and Equip	Storage	36 kr	

Category	Sub category	
Consumables	Drill bits	
Electronics	Hand tools	
Fasteners	Lubricant	
Hardware	Milling bits	
Raw material	Cable	
Tools and Equipment	Connectors	
	Controller	
	Sensors	
	Switches	
	Glue	
	Magnets	
	Screws, nuts, washers	
	Zip ties	
	Bearings	
	Cable management	
	Motors & drivers	
	Power supply	
	Spindle & driver	
	Aluminium	
	Elastic cord	
	Leather and cloth	
	Plastic	
	Valchromat	
	Collets	
	Safety equipment	
	Storage	