Particulars	Quantity	Supplier	Notes
Structural Parts		Local Hardware store	
MDF 6mm	3 x 2ft*2.5ft		These are the materials required for making the
MDF 4mm	1 x 2ft*2.5ft		contents of the laser pack. Birch plywood is the
Acrylic 10mm	1 x 0.25m*0.25m		original material of choice. We have used MDF which
Delrin 3mm			works fine but is not as strong it would appear.
Delrin 6mm			Surface finish isnt too great and the laser cutting
Polypropylene 0.5mm	1 x 0.3m*1m		leaves a smoky residue. If you choose to implement
PTFE tube	1/4"*1/8"*0.1m		the H3 extruder by chopmeister like we did, then you
			will not need the 4mm Delrin.

Particulars	Quantity	Supplier	Notes
Hardware		Local Hardware store	
Hex head bolts:			These quantities were primarily obtained from the
M3 x 10mm	60		KitBOM website. Suitable number of extras were
M3 x 12mm	20		added to each sizing. We have not physically counted
M3 x 16mm	80		the number of bolts or nuts. But we never ran out of
M3 x 20mm	30		nuts, screws or washers and we still have a handful
M3 x 25mm	5		of each type left as spare. Also as we used the H3
M3 x 30mm	60		extruder there were bound to be extras.
M3 studs	4		We bought a 1m M3 rod and cut the required lengths
M3 washers	25		
M3 nylock nuts	15		
M3 hex nuts	170		Can never have enough of these!
M8 bolt x 50mm	1		To be knurled and used as hobbed bolt for extruder.
M8 nuts	5		Just in case
M8 washers	10		Just in case
M3 x 30mm flat head countersink bolt	4		For acrylic bed
Springs (6mm OD x 10nm length)	4		For bed leveling
Spacers 3mm dia, 15mm length	10		Threaded or unthreaded are fine. These are very useful
Spacers 3mm dia, 25mm length	10		to have around especially for mounting the electronics!
			www.dfrobot.com carries some of these items in their
			3d printer section

Particulars	Quantity	Supplier	Notes
Rods & Leadscrew			
12mm	2 x 339mm	IGUS	IGUS is relatively expensive but high quality.
8mm	2 x 337mm, 2 x 348mm	makemendel.com	MakeMendel rods were ordered and then cut to size by us.
6mm	2 x 268mm	IGUS	
M12 x 3 Acme Screw	1 x 340mm	IGUS	Screw has to be machined to correct length and one end
Leadscrew Nut (Z drive nut)	1pcs	IGUS	has to be turned down to 8mm diameter for atleast 15mm
			length. Nut was machined on a CNC lathe out off brass.
			CAD File is on github under large ultimaker?!

Stainless steel rods may also be okay. Alternatively you can buy regular tool steel rods and get them hard chrome plated. However tolerances need to be maintained. A shaft tolerance of h6 should be fine. However enlist the service of an experienced and knowledgeable machinist.

Particulars	Quantity	Supplier	Notes
Bearings			
LM12LUU (12 x 21 x 57mm)	2	Locally sourced	(ID x OD x width)
LM6LUU (6 x 12 x 35mm)	2		These bearings are available at a cheap price in the 3d
688ZZ (8 x 16 x 5mm)	12		printer category of www.dfrobot.com. Also try ebay or vxb.com
608ZZ (8 x 22 x 7mm)	2		for H3 extruder
61801ZZ (12 x 21 x 5)	1		for H3 extruder
Bushings (8 x 11 x 30)	4		We made our own out bushings off gun metal. Similar ones but
Shaft Coupling	1	MakeMendel or dfrobot	half the length are available on dfrobot.com

Particulars	Quantity	Supplier	Notes
Pulleys & Belts			
GT2 Pulley, 5mm bore, 20teeth	2	Adafruit Industries	
GT2 Pulley, 8mm bore, 20teeth	10	Adafruit Industries	
GT2 Belt (open ended)	3m	SDP/SI	We printed clamps from thingiverse to close the belts.
GT2 Belt, 101teeth	2	SDP/SI	Each of the long belts is around 606mm in length.

If you decide to go with MXL pulleys and belts as in the stock ultimaker, they are available on dfrobot.com in the correct sizes also. You will need 4 long belts and 2 short belts. I recommend you go with the MXL belts as using the clamps with the open ended belts was a real headache. SDP/SI does catalog 303 teeth GT2

belts. However they werent in stock and ca

Hot End

Complete hot end	1	gadgets3d.com	Includes the Al plate, nlock, nozzle, brass tube & PEEK
Cartridge Heater	1	dfrobot.com	60W @ 19V
Thermocouple	1	dfrobot.com	K-type thermocouple
PEEK insulator & PTFE-PFA adapter	1	dfrobot.com	The adapter coonects the brass tube to the bowden PFA tube
TC Amplifier board IC AD595AQ	1	SP Road	This is based on the reprap thermocouple sensor board.
TC Amplifier board components		SP Road	We fabricated our sensor board on a piece of perfboard.

Extruder

All parts were printed for the H3 extruder by chopmesiter. See the link below for instructions and BOM for this extruder design. Owens Bowden clamps were also implemented to better secure the bowden tube. We made our own hobbed bolt out of a M8x50mm bolt. It was roughly knurled. Adequate space was left for the bearings to sit on the bolt. M8 washers were used as spacers where required.

Electronics

RAMPs 1.4 Ultra Pack	1	fabster3d on eBay	This includes G3D stepper drivers, wires, LCD & SDRamps
NEMA 17 Stepper Motors	4	MakeMendel or dfrobot	The RAMPS also came with 2, 5mm bore, 20 teeth GT2
Limit Switches	6	MakeMendel or dfrobot	pulleys! Fan for hot end was also included in the pack.
Electronics Blower Fan	1	dfrobot	Arduino Mega comes with RAMPs.
AL Heat Sinks (30mm x 30mm x 12mm)	4	dfrobot	To cool stepper motors.
Power Supply (SMPS)12V, 240W	1	locally	try ebay

Its good to have a bunch of extra wire (22 AWG) lying around in red, black and any other colour like blue or green. Some extra connectors and male header pins will be handy.
Slightly thicker cable like 14AWG or 16AWG is needed for the power supply. To connect the power supply to the mains, a PC power cable can be hacked!
If you decide not to go with the RAMPs ultra pack or even the RAMPs electronics altogether, remember that you still need stepper drivers and a fan for the hot end.

Filament

3mm Orange PLA	1kg	MakeMendel	Many sources for this with lots of different colors!
			However make sure it is 3mm and PLA. Try ebay for deals!

Tools

Allen Keys		Not all tools are required but they are good to have!
Hacksaw		The ones in bold italics are very useful.
Measuring Tape		
Blade or Knife		
Scissors		
Spirit Level		
Hand drill		Powered is not advisable on thin wood, use with caution!
Nose Pliers		The drill is required to make mounting holes for the
Spanner		power supply as well as the RAMPs.
Digital Vernier Caliper		
Screw driver		
Precision Screw driver		
Soldering Iron		
Multimeter		

Misc

3M Scotch Tape 232	48mm x 55m	Locally	Couldn't source Painters tape. But try ebay
Grease for 3D Printer	5gm	DFRobot	
Mesh cable guide	1.25m	DFRobot	
Spiral Cable Wrap	1m	DFRobot	
Electrical tape			
Spray Paint Cans	4 x 400cc cans of color, 1 clear		If you want to paint your ultimaker. Add a protective clear
Super glue			coat for better sheen
Sand paper	1 rough, 1 fine		You'll need more if you decide to paint the ultimaker!

Ultimaker Lasercut Panel Drawings: http://www.thingiverse.com/thing:8563
H3 Extruder: http://www.thingiverse.com/thing:27626
Owens Bowden Clamps: http://www.thingiverse.com/thing:11864 & http://www.thingiverse.com/thing:17027
KitBOM's BOM: http://kitbom.com/kitbom/ultimaker-rev-3
Reprap Thermocouple Sensor Board (TC amplifier) : http://reprap.org/wiki/Thermocouple_Sensor_1.0
Z-axis acme threaded drive nut CAD design file : https://github.com/bwattendorf/Large-Ultimaker-type-3d-printer/tree/master/machined%20parts%20drawings

Although we did not source a lot of parts from them, www.dfrobot.com carries many of the parts required to build the ultimaker. Also they're shipping is fast and cheap!