

PLAN OF MANUFACTURE : USB DESK LAMP

STEP	LESSON	STEP	Equipment	Materials	H&S
1	1	Use technical drawing to design plastic lamp components on 2d design	ICT suite	n/a	N/A
2		Cut out lazer cut plastic parts using lazer cutter	Lazer Cutter, Acrylic Plastic	3mm Acrylic plastic	Extractor fan
3		Wet & Dry all plastic parts and glue together using PK1 glue	Wet/dry paper/ Syringe/Pk1	Pk1 Adhesive glue	Gloves
4	2	Design lampshade on Solidworks	Solidworks		
5		Use 3d printer to print out lampshade	3d printer , ict suite	white PLA wire	Ensure fan is running to cool machine
6		sand down and file sides of lampshade & drill hole for cable	Needle file, Wet/dry board, pillar drill		
7		Glue LED chip into lampshade & solder wires	soldering iron	hot glue gun, solder	
8	3	Mark holes in arms to be drilled	engineers square, scribe, centre punch, Hammer	3mm Aluminium	Keep hands away from hammer
9		Drill arm holes using pillar drill	clamp, pillar drill, 5mm drill bit		Safety goggles, Make sure work is clamped
10		remove excess swarf from drilled holes	swarf remover		dispose of sharp swarf carefully
11		Round and file edges of arms to achieve a smooth finish	Disk sander, Needle file, Wet/dry paper		Goggles when using disk sander
12	4	Mill holes in both arms on millar use DRO to measure holes	vertical miller, white water, DRO		white water when cutting, Goggles, gloves
13		clean down miller when finished	brush		wear gloves
14		wet and dry faces of both arms to achieve a brushed aluminium finish	wet/dry paper, Spindle drill bit		wear gloves when using spindle on pillar drill
15	5	set up lathe with correct cutting tool for lock component	Lathe, Cutting tools, White water DRO	50mm Aluminium bar	Gloves, White water, Goggles
16		Use engineering drawing to turn down lock component on lathe	Lathe, Cutting tools, White water DRO	50mm Aluminium bar	Gloves, White water, Goggles
17		Use knurling tool to add a knurl onto lock component	Lathe, Knurling tool, White water		Gloves, White water, Goggles
18		Tap and die to add an m10 thread to lock component	tap and die set, soft jaws, vice, lubricant	50mm Aluminium bar	gloves
19	6	steek wool all metal components to achieve a good finish	steel wool	all metal parts	
20		Countersink all plastic holes (Especially base)	Hand drill, Countersink bit, Flat surface	3MM acrylic plastic	Ensure all loose clothing / hair is tied back
21		polish all plastic parts to achieve a good finish	plastic polish		clean hands thoroughly after use
22		Measure all parts using vernier calipers to record accuracy	vernier calipers , paper	all parts	
23	7	Use cap screws to assemble complete product	allan key, cap screws, screwdriver		
24		Plug product into usb socket to test			