

Component	Quantity	Link	Total price
Commercial parts:			
Arduino Uno R3/ compatible board	1	http://wv	\$20.87
Stepper motor (WxHxD): 42x42x41 mm, Shaft (ØxL): 5x22 mm	1	https://tr	\$19.66
Power supply 12 V/ 3 A, connector: 5.5 / 2.1 mm	1	https://tr	\$12.70
Step motor driver A4988	1	https://tr	\$9.22
LCD module 16x2, (WxHxD): 80x36x13 mm	1	https://tr	\$6.90
Needle bearing HK 0408 (IØ x OØ x L) 4 mm x 8 mm x 8mm	3	http://wv	\$4.84
Encoder 5 V, 0.01 A, 20 switch postions, 360 °	1	http://wv	\$2.38
Pump tubing, 1.6mm wall thickness, 0.2m	1 *	https://w	\$2.04
Foot self-adhesive (L x W x H) 12.6 x 12.6 x 5.7 mm	4	http://wv	\$0.79
Straight pin (Ø x L) 4 mm x 14 mm	3 *	http://wv	\$0.73
Control knob (Ø x H) 16.8 mm x 14.5 mm	1	http://wv	\$0.68
Potentiometer/ Trimmer 10k Ohm	1	http://wv	\$0.23
Resistor	1	http://wv	\$0.08
Capacitor 47µF, 25V	1	http://wv	\$0.07
			\$81.20

Wiring:

PCB (L x W) 80 mm x 52 mm, Contact spacing 2.54 mm (CS)	1	http://wv	\$0.97
Pin strip, straight, CS 2.54, nominal current 3A, 36 pins	2	https://w	\$1.32
Socket strip, straight, CS 2.54, nominal current 3A, 40 pins	1	https://w	\$0.89
Cables, different colors (e.g. Ø 2.5 mm, cross section 0,5 mm ²)	1	http://wv	\$0.58
Heat shrink (suitable for cables, e.g. Ø 3 mm)	1	http://wv	\$0.56
			\$4.33

Screws:

M3, L = 25 mm (length without head), ISO 4762 (hex head)	4		
M3, L = 16 mm, ISO 4762 (hex head)	7		
M3, L = 8 mm, ISO 4762 (hex head)	16		
Small tapping screw (for LCD, Ø 2-2.5mm, L = 3-6 mm)	4		
M3, L=10mm grub screw, DIN 916	1		
M3, nut, ISO 4032	1		

3D printed parts

Case_main	81	cm ³	
2 x Case_side (3D print not necessary => milling/cutting/sawing)	47	cm ³	
Pump_case_bottom	12	cm ³	
Pump_case_top_120°	9	cm ³	
Bearing_mount_bottom	6	cm ³	
Bearing_mount_top	4	cm ³	
	total volume	159	cm ³
	total weight	219.42	g (PETG)
		PETG: 25\$/kg *	\$5.49

* Please note that the price has been calculated for a student team that can take advantage of certain benefits. We assumed free access to a 3D printer and reduced purchase quantities from the suppliers of the tubing and the straight pins.

\$91.01