

Tabel 1: Necessary metal parts and the total price

#	material	specifications
2	M10 bolts	length: 220mm; threaded on 50mm
1	M5 threaded bar	Length: 1m
2	M6 bolts	80mm
2	M6 wingnuts	/
2	M5 bolts	Length: 40mm
2	M5 wingnuts	/
2	M5 washers	Diameter: 10mm
1	Z-coupler	5mm to 5mm
1	Ball bearing	inside diameter: 5mm outside diameter: 16mm
Total price		<5€

Tabel 2: Necessary electronics for the syringe pump with prices

#	material	specifications	Price (€)
1	1.8° Nema 17 stepper motor	<ul style="list-style-type: none"> - 200 steps per revolution - Bidirectional 	26,51
1	Allegro A4988 DMOS breakout board	<ul style="list-style-type: none"> - Simple step and direction control interface - Five different step resolutions: full-step, half-step, quarter-step, eighth-step, and sixteenth-step - Adjustable current control lets you set the maximum current output with a potentiometer, which lets you use voltages above your stepper motor's rated voltage to achieve higher step rates - Intelligent chopping control that automatically selects the correct current decay mode (fast decay or slow decay) - Over-temperature thermal shutdown, under-voltage lockout, and crossover-current protection - Short-to-ground and shorted-load protection - 4-layer, 2 oz copper PCB for improved heat dissipation - Exposed solderable ground pad below the driver IC on the bottom of the PCB 	6,99
1	Arduino UNO micro controller	<ul style="list-style-type: none"> - Based on the ATmega328 - 14 digital input/output pins (of 	

		which 6 can be used as PWM outputs)	
		- 6 analog inputs	
		- 16 MHz crystal oscillator	
		- USB connection	
		- power jack	
		- ICSP header	
		- reset button.	24,2
1	9V battery	- power supply for the motor	1,89
1	Breadboard & wires kit	/	12,1
1	USB-cable	Cable which connects the laptop too the Arduino UNO	2,42
Total price			74,11