

Micropumps

ID: PP-1

Prototyping Protocol – 10 Pts

Due Date: 4/6/2020 11:59 PM, Canvas Up

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Protocol Description – (Shaft Coupling)

This is the prototyping protocol used to create a shaft coupler that allows multiple peristaltic pump heads to run on a single motor. The shaft couple will allow for a longer shaft to be fitted to the motor, which would then allow for multiple pumps to fit on the shaft. The coupler can be milled on a drill press and all materials are available at most home improvement stores.

Tools and Equipment

ID	Tool	Name / # if applicable	Location	Purpose
PT1	CAD program	Solidworks	Computer file	Design a prototype for the micropump and it's parts if necessary
PT2	Drill press	Stark 11 in. 6.6 Amp 120-Volt, 16-Speed Stationary Drill Press Floor Stand with Laser Light Model# 53500-H	Home Depot	Drill holes
PT3	7 mm steel thread taps	Drill America M7 x 0.5-High Speed Steel Hand Plug Tap (1-Piece)	Home Depot	Tap threads for set screws

Micropump – Prototyping Protocol

		Model# DWTSM7X.5		
PT4	Vice	BESSEY 6 in. Heavy-Duty Bench Vise with Swivel Base Model# BV-HD60	Home Depot	Holds the material steady to allows holes to be drilled
PT5	5mm Drill Bit	Drill America 5.00mm High Speed Steel Killer Force Drill Bit (12-Pieces) Model# KFDMM5.00P1 2	Home Depot	Bore main shaft holes
PT6	7mm Drill Bit	7.00mm High Speed Steel Killer Force Drill Bit (12-Pieces) Model# KFDMM7.00P1 2	Home Depot	Bore set screw holes
PT7	Hack Saw	Stanley 12 in. High-Tension Hack Saw with 10 in. Mini Hack Saw Model# 20-036M	Home Depot	Cut material to appropriate length

Materials

ID	Material	Purpose
PM1	20 mm steel bar	Shaft coupler body
PM2	M7 set screws x 8	Locks shafts into the coupler

Computer Files

ID	FileName / Link	Purpose	Location
CF1	Shaft Coupler.SLDPRT	Design coupler	Google Drive



Figure 1. Render of the shaft coupler design.