*Intro. to Biodesign*
*BIOE 3090*

**Micropump – Prototyping Protocol**

Department of Bioengineering
UNIVERSITY OF COLORADO
**DENVER | ANSCHUTZ MEDICAL CAMPUS**

# Micropumps

## Prototyping Protocol – 10 Pts

**ID: PP-1**

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

**Date Written –** 4/4/2020

**Date Revised –** 4/6/2020

**Author: Kyra Flores, Ana Meza, Uyen Nguyen and Jonathan Tullos**

**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 <br> 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 |

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| | | Model#<br>DWTSMT7X.5 | | |
|---|---|---|---|---|
| PT4 | Vice | BESSEY 6 in. Heavy-Duty Bench Vise with Swivel Base<br>Model#<br>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)<br>Model#<br>KFDMM5.00P12 | Home Depot | Bore main shaft holes |
| PT6 | 7mm Drill Bit | 7.00mm High Speed Steel Killer Force Drill Bit (12-Pieces)<br>Model#<br>KFDMM7.00P12 | Home Depot | Bore set screw holes |
| PT7 | Hack Saw | Stanley 12 in. High-Tension Hack Saw with 10 in. Mini Hack Saw<br>Model#<br>20-036M | Home Depot | Cut material to appropriate length |

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**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**

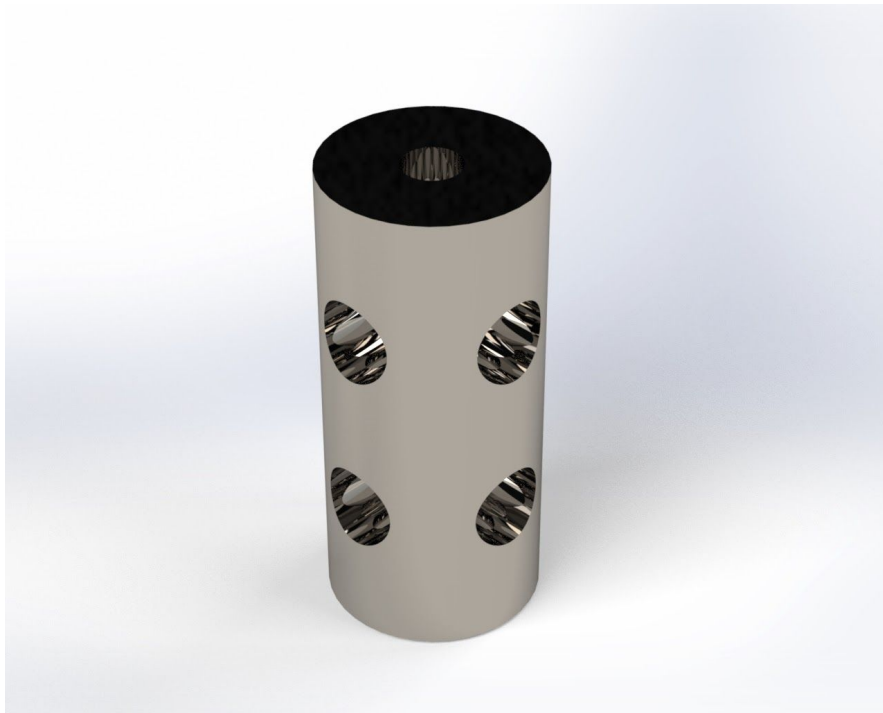| ID | FileName / Link | Purpose | Location |
|---|---|---|---|
| CF1 | Shaft Coupler.SLDPRT | Design coupler | Google Drive |



**Figure 1.** Render of the shaft coupler design.