**Membrane Valve**

***Basic Component description***

This is a circular microvalve that uses a membrane that deflects through the application of pressure

Icon

Description automatically generated

***Component Specs***

Requires XX PSI of input pressure to operate

***List Input and Output nodes***

Chart, box and whisker chart

Description automatically generated

Figure 1: Control valve netlist diagram

CircularValve({P} [fluid] fluid input, (P) [fluid] fluid output, (P) [pneumatic] control input, (P) [pneumatic] control output)

Keep in mind the control output is for routing purposes for flushing.

***Microfluidic Operations***

Control, transport

***Component Verilog-AMS parameters***

F1 F2 P1 P2 CircuilarValve(d\_valve | valve diameter, h\_fluid | fluid chamber height, t\_memb | membrane thickness, h\_air | pneumatic chamber height)

***Virtuoso Description***

Chart

Description automatically generated

**OpenSCAD Description**

valve(d\_valve | valve diameter, h\_fluid | fluid chamber height, t\_memb | membrane thickness, h\_air | pneumatic chamber height)

A picture containing diagram

Description automatically generated

***Manufacturing Description***

This section will contain information of the process that is need to create the component. This will include information on the exposure profile, and how this changes throughout the part, and special post processing steps that need to be done. Make note for JSON format, points to JSON file.

***Component model***

Resistance is calculated though the input channels of the device, and diameter of the valve and is a sum of the resistances of the input port and valve diameter.

Q – Flow rate

Rhyd – hydraulic resistance

Eta – dynamic resistance

ΔP – Pressure across component

l – input/output channel length

h – input/output channel width

w – input/output channel height

***References***