Force control specs:

-Apply between 0-50, aiming for +/- 0.1 N accuracy

-For purposes of evaluation force/displacement sensitivities of actuators, use k = 55 N/mm for the roller-web-sample stiffness (from FE analysis with *no system compliance*; assumes 2" contact length, 1.5 cm roller radius (PDMS), and an applied force ~10 N).

-The roller will be actuated vertically to impart a force to the sample, and the force will be measured below the sample. Note: the contact pressure (i.e., the pressure between the plastic web and the Si sample) is what determines printing performance; <u>therefore, the force experienced by the sample is the force that governs that pressure.</u>

-The feedback loop will consist of: selecting a setpoint force ($F_{setpoint}$), comparing the force on the sample ($F_{sample}$) with $F_{setpoint}$, actuating the roller to minimize the difference ($F_{sample} - F_{setpoint}$), repeat ...

-A feedback rate of >= 100 Hz to make force corrections

-On the upper limit, record up to several thousand data points of the force history accumulated up to ~30 seconds save the data in a simple format.

Pivot mount
($\Delta\theta_y$ only; passive)

$\Delta z$

$\Delta x$

Force sensor

Passive leveling system