*1:1\_1000*

- *V* *=*  *=> L=*

V: volume (mm3)

r: radius of syringe (mm)

L: length of Run (mm)

S: the bottom Area of Syringe(mm2)

*- Steps for L* =

Pitch: lead screw pitch distance (mm)

Step: number of steps for 1 resolution

- *Flowrate =* 

*Speed of motor (rpm)*

Flowrate: the rate of flow *(*  μl/min)

Vout: the target output of volume (mm3)

Time: the time Run (ms)

*- MicroStep = 16*

*- Giảm tốc (decelerate) = 49*

*-Speed = = rpm; rpm: revolution per minutes*

*rpm=*

*N: pulse of revolution*

*=> delay =*

*delay(ms) : the time for stepper motor run*

*speed : max ( 2000* μl/min) and min ( 10