TOOL TOUCH OFF VIA PROBING

The tool can't stop instantaneously on contact when probing. The tool will travel some distance into the material. How far it will travel after actual contact is determined by the machines configuration and the probing feedrate. The controller will react to contact after some time interval and then the axis movement must decelerate to a stop. Thus the over travel is determined by how much the axis moved in the time frame of contact confirmation and how fast the axis can come to a stop.

1. For a kernel speed of 25khz one unit of kernel speed is 1/25000= 0.000040 seconds.

2. For a Debounce Setting of 1000, which is the amount of time the probe signal/ LED must be continuously on before Mach will consider signal as having turned on.

   1000 x .000040=.040 sec (contact confirmation time)

3. For a Feedrate of 1 IPM the axis will move the following distance during contact confirmation.

   1 in/min x .040 sec x 1min/60sec= **0.0000266 inches**

4.The axis must also decelerate. Say Accel setting =20 in/sec/sec, steps per unit =12700, Axis velocity is 40 ipm, then looking at the graph in motor tuning it takes .03 sec's to deccelerate.
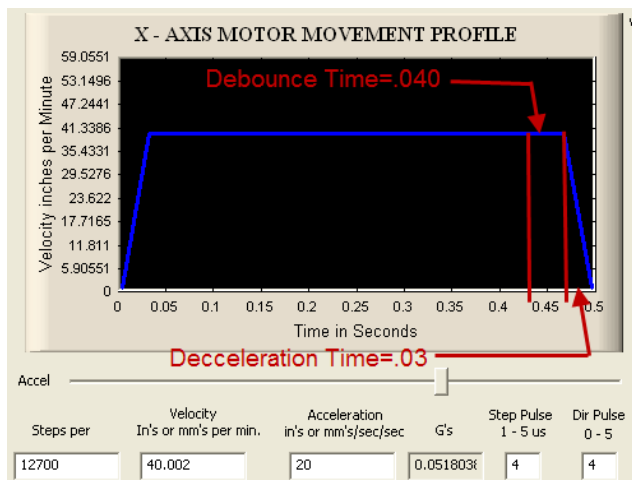
For an axis velocity of 1 it takes 1/40 x .03 sec=.00075 sec to decelerate

 The axis travel during deceleration is then:

1 in/min x min/60 sec x .00075 sec= 0**.0000125"**

5.The total axis movement into the material as calculated would be:

0.0000266" Travel during debounce
0.0000125" Travel during deceleration
0.0000391"   Total travel into the material

So use min debounce setting (if you can) and also use a slow probe federate.
There will be no need to "double probe".

Probing should not cause damage, will be accurate, but repeatability will only be as good as YOUR system.

RICH