

Problem/Procedure Description

How to Use 2.5D Mode


Requirements

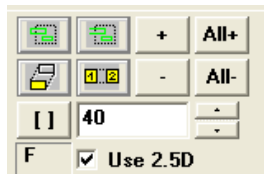
- CircuitCAM
- BoardMaster
- Material
- Milling Tools

Problem/Procedure Solution

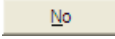
1. Prepare data in CircuitCAM and export to *.LMD.
2. Open BoardMaster.
3. Load any special Tool Libraries or Phase Files (Configuration>>Phases or Configuration>>ToolLibrary>>Mill/Drill if necessary).

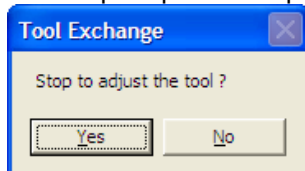
CAUTION: May cause damage to the machine if improper tool speed and feed rate is used when milling different types of materials.

4. Import desired *.LMD file (File>>Import>>LMD/LPR)
5. Move *.LMD file to desired spot on the material using the  icon in BoardMaster.
6. Select the Phase from the Phase drop down menu that will be utilizing the 2.5D mode.
7. Check the Use 2.5D mode check box.



8. Load desired tool by selecting it from the Tool Position drop down menu.

Note: If prompted to stop and adjust the tool, select 

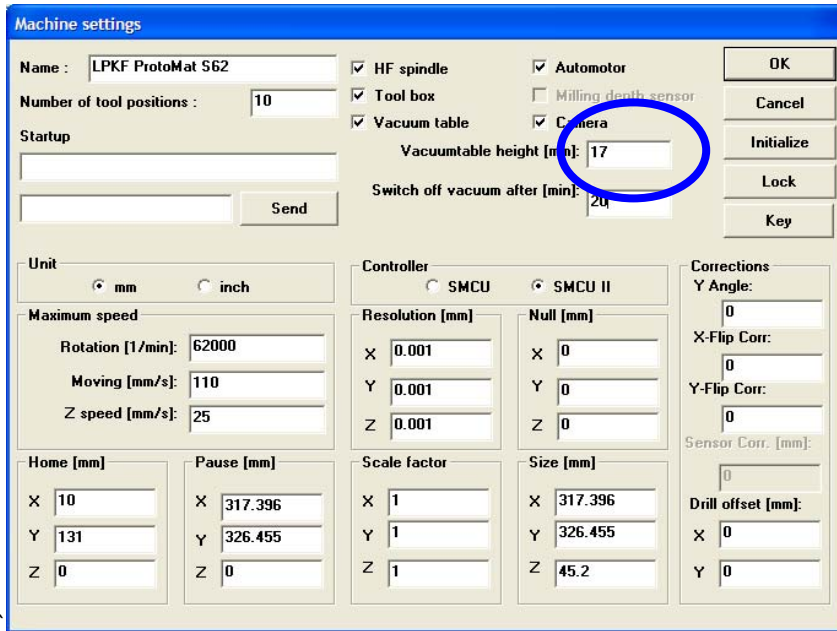


9. Remove foot from the depth limiter (see manual). Install the brush head if needed.

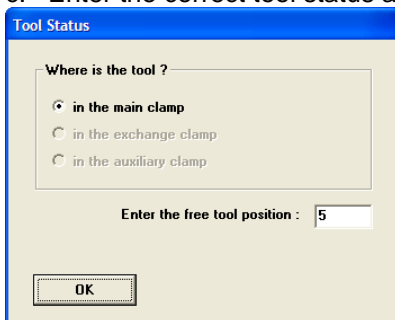
10. Find material height (zero point)

a. Go to Configuration>>Settings, press **Unlock**.

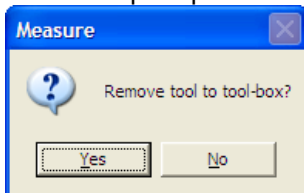
b. Change the vacuum table height to 17, press **OK**.



c. Enter the correct tool status and select **OK**.



d. When prompted to Remove tool to tool-box, select **No**.



e. Go to the Configuration>>Material>>Size.

- f. Change the Free drive level [mm] to 2.0
- g. Enter the thickness of the material to be machined under Material thickness [mm] press ok.

Define material size and position

	X [mm]	Y [mm]
Low corner	0	-0
High corner	0	-0
Size	0	0

Reversed




Z-material values

Free drive level [mm]: 2

Material thickness [mm]: 1.6

Underlay [mm]:

OK Cancel

- h. Move machine head over material away from your project ( + click on any spot with the mouse within the machine working area)
- i. Manually turn the motor on 
- j. Press the head down button and verify that the tool is not touching your material .
- k. Press the head up button.
- l. Note **Current Z:** location.

X: 144.491

Y: 21.706

Z: 21.738

Focus Stop

- m. Add your **Free drive level** to the **Current Z:** location. After the numbers are calculated, this value's name is **Original Z**

(Z location + free drive level = Original Z (21.738 + 2 = 23.738))

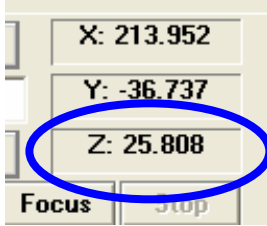
- n. Manually step the machine head down, until the tool is touching the top of the material.

Home

0.1


Head Down

- o. Note Z location. (Material Zero) (25.808)



- p. Subtract the **Original Z** value from the **Material Zero** value to calculate the **Vacuum Table Offset**.

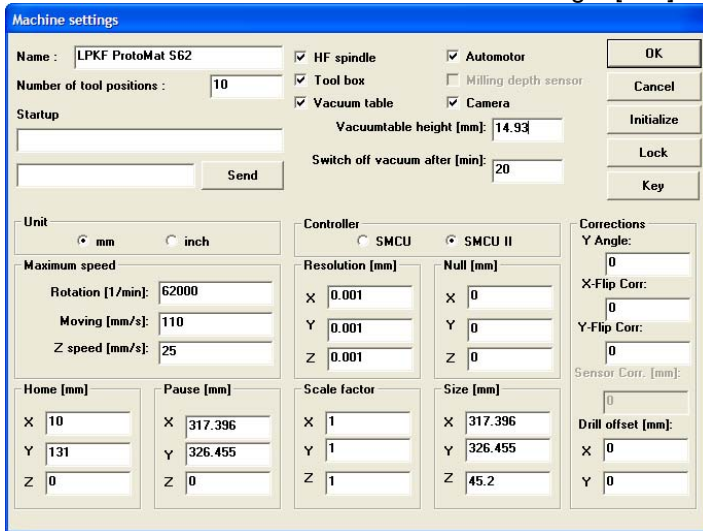
(Material Zero – Original Z = Vacuum Table Offset) 25.808 - 23.738 = 2.07))

- q. Go to Configuration>>Settings, press .

- r. Subtract the **Vacuum Table Offset** from the **Vacuum table Height** to calculate the **New Vacuum Table Height** (step 10p)



(Vacuum table Height - Vacuum Table Offset = New Vacuum table height)
 17.00 – 2.07 = 14.93))

- s. Enter the new value under Vacuumtable height [mm].

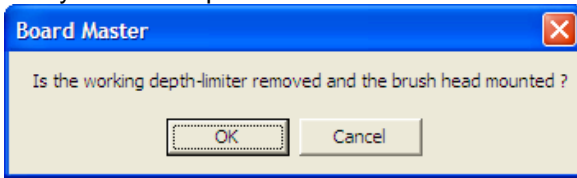


- t. Press .

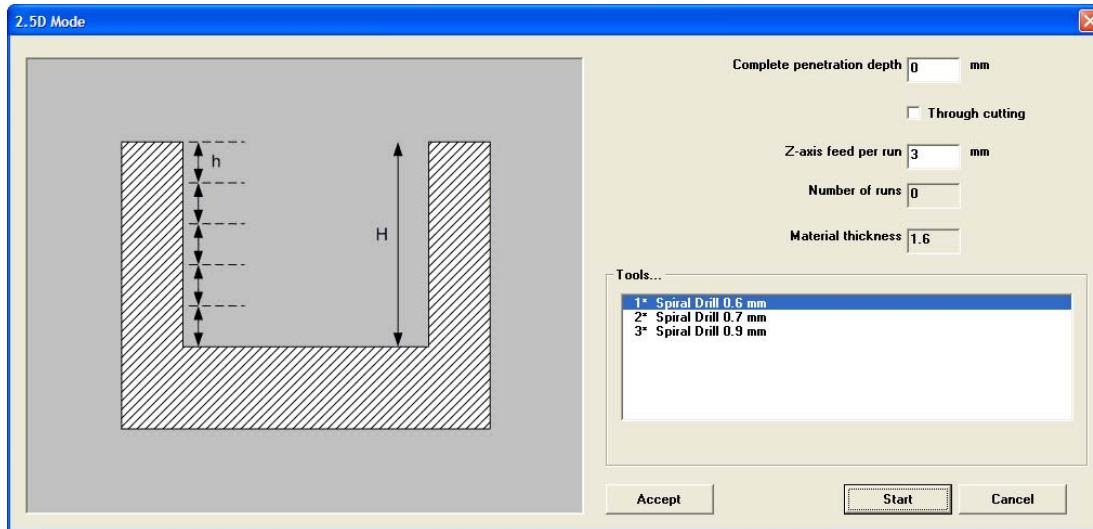
11. Enter tool status as described in step 10c.

12. Press  and then .

13. Verify that the depth limiter has been removed and brush head is installed.



14. Enter desired data into the 2.5D mode menu settings. If using multiple tools each tools individual depth must be set. Left click on the bit to set the depth and select the **Accept** button. Repeat this for each bit.



Information on settings:

Line Item	Description
Complete penetration depth	All values between zero and the entered material thickness in the menu Configuration>>Material>>Size under Thickness are possible.
Through cutting	The tool cuts 0.2 mm (8 mil) deeper than the entered material thickness.
Number of runs	Take the Complete penetration depth and Divide by the Z-axis feed per run to calculate the number of runs.
Z-axis feed per run	This value tells the system how deep to go each run (Pass).

15. When ready, press **Start** and the machine will start cutting the project.

References

- LPKF Technical Support