

### Operating Automatic Pick and Place

1. Apply solder paste to the desired board
2. Add parts to be placed in the square boxes on Bert
  - a. Make sure they are in the left most corner of the square boxes.
  - b. The parts need to be aligned with how they will be placed on the board whilst considering the rotation the machine will perform. If unsure of the rotation, check under the “Components” tab and the angle.
3. Check the instructions for placing reels on Bert.
4. Plug in the cart (the extension cord is located on the left side of the cart)
5. Turn on the computer, and log in based on the given login information
6. Load the PCB into the machine. Adjust the springs to the extent that the bars will only move if you apply slight pressure.
7. Login into the laptop associated with the cart using the credentials provided on the sticky note.
8. Turn the machine on. The switch is located on the right side of the machine and is a flip switch.
9. Open the application shortcut for the machine.
10. Insert USB containing \*.dpv file for desired board.
  - a. Follow the instructions on importing a new file.
11. Once the file is properly imported.
12. Open the application on the desktop labeled: “**SMTMain -Shortcut**”
13. Please ensure the machine is clear of any obstructions and that hands are clear.
14. An on screen prompt will appear: “**Please CONFIRM to zero the machine**”. Select “**CONFIRM**”
  - a. NOTE: The machine will begin to move quickly. Make sure you are not in its path
15. Confirm cameras are working.
  - a. Choose the following to confirm cameras are working:
    - i. “**Diagnostics**” -> “**Move**”
    - ii. If the camera is not showing the silver of the machine, exit out of the program, turn off Bert, and unplug the USBs from the computer. Repeat steps 4 - 8 until you are able to see out of the camera.
16. Once cameras are working, click on the Green Back Arrow (located on the top right hand side of the screen, until you return to the main menu.
17. Select “**Run**” from the main menu.

- a. This takes you to the Work File page.
18. Select the newly imported file and then select “**Edit**”.
19. In the “**Components**” tab, make sure all the components have comments. Do the same for the “**MStack**” tab.
20. Open the “**PCB Calibrate**” tab.
21. Ensure that the **Designator** column shows **Mark 1, Mark 2, and Mark 3**.
  - a. If that is not the case, click **Define Mark**, and it will switch it to the marks.
22. Select “**Edit**”.
23. Enter the X and Y coordinates of the first fiducial.
  - a. Click the green advance arrow, and enter the coordinates of the other two fiducials.
  - b. Click the green back arrow.
  - c. “**Save**”.
24. Select “**Calibrate**”.
25. Select the plus sign that is above **Mark 1**.
  - a. Use the arrows in order to align the crosshairs with the first fiducial mark.
  - b. Repeat this process for **Mark 2** and **Mark 3**.
  - c. Hit close.
26. Select the “**MStack**” tab.
  - a. Make sure the first stack is highlighted in blue, and click the “**Modify ID**” tab at the bottom. Enter the number reel (1-29) or the IC tray (60-74) correlated to that component.
  - b. Repeat this process for all of the stacks that exist.
  - c. Hit “**Save**”.
27. Whilst under the “**MStack**” tab, select the “**Edit**” tab at the bottom.
  - a. Change the **Speed** and **Pull Speed** to **50%**.
  - b. Ensure the comment is accurate to your personal preference.
  - c. If the part is coming from a reel, the **Feed** should be 4, otherwise, leave it as 0.
  - d. Use the **Coord. Set** in order to set the exact location of pick up for the part.
  - e. Repeat this process for all of the different stacks.
28. Click the green back arrow, and hit save.
29. Select the “**Component**” tab.
  - a. Make sure the first component is highlighted blue. Then select “**Edit**”.
  - b. Change the **Speed** to **50%**.
  - c. Ensure that the “**MStack**” reflects where the part is being picked up from (1-29 for reels, and 60- 74 for the IC tray).
  - d. Repeat this process for all of the components.
  - e. Use the green back arrow and hit save.
30. Hit the green back arrow again to return to the “**Work File**” screen.
31. Make sure the file you want to run is highlighted blue.

32. Select “***Load***”.
33. Select “***Run***”.
34. When the job is done, return to the homepage.
35. Close down the program and shut the machine down.
  - a. Turn off the machine.
  - b. Shut down the computer.
  - c. Unplug the machine.