Setting Part Zero and Setting Cutting Tool for Wheel Lathe

There are three sections in this document:

A: Setting Tool #1 and Tool #2 on center line height to the spindle which are explained in steps 1 thru 3
B: Setting Part 0 for X & Z and setting X & Z reference with the probe which are explained in steps 4 thru 16
C: Setting the tool offset for Tool #2 which is explained in steps 17 thru 25

Note:
*The probe, Tool #1, is the reference tool. Make sure the X and Z offset are set to 0 before starting.
*Do not remove your probe out of the tool holder. Remove the whole holder from the tool post. If you do remove the probe from the holder, when you put the probe back you will have to reset the probe and the turning tool.
*Do not remove Tool #2 out of its holder. Replace the diamond insert only and keep Tool #2 in the holder. If you do remove the tool from the holder than you will need to reset your tool offset library for tool #2.
*Remember your probe has been used to collect all your wheel data at the same position (same geometry coordinate system) so do not remove the probe from the master tool holder to a different position.

A: Setting Tool #1 and Tool #2 on center line height to the spindle

Tool #1 is the digitizing probe for digitizing the face of the wheel.
Tool #2 is the tool for cutting the face of the wheel.

1. Setting Tool #1 at the center of the spindle
Using the 3-jaw chuck to hold an adapter and dead center, insert Tool #1 in the 2-way tool post and move X and Z axes close to the center point. Adjust the tool holder up and down until Tool #1 is aligned to the center of the dead center as shown in Picture 1.
2. With Tool #1 at the center of the spindle, tighten the adjustment screw nut to secure the position and make a reference mark on the adjusting level screw for future reference as shown in Picture 2.

3. Set Tool # 2 at the center of the spindle
   Remove Tool #1 and insert Tool #2. Repeat the same procedure for Tool #2 as was done for setting Tool #1 up and down. Now, Tool #1 and Tool #2 are the same center point up and down.
B. Setting Part 0 for X & Z and setting X & Z reference with the probe.

4. Load Tool #1 into the tool post. Press F3-MDI. Type T0101 and press Cycle Start as shown in Screen Shot 1.

5. After you press Cycle Start, you will see Tool: T0101 at the top right of the monitor.
6. Press ESC to go back to the main screen.
7. Before you go any further you need to make sure that there aren’t any offsets in the Tool Offset and the Tool Wear Adjustment menus for any of the tools. Press the F9-Tool Wear to go to the Tool Wear Adjustment menu. Press F1-Clear All to clear all of the offsets if any are entered. Press F2-Tool Offset. When prompted, answer yes to save the changes. Move the cursor to highlight Tool #1. If X and Z offsets are 0, you do not need to do anything. If they are not 0, highlight the offset with Entry mode: set to absolute, type 0, then press ENTER. Do the same for the other offset for Tool #1. Press F10-Save to save the changes. This will take you back to the Tool Wear Adjustment screen. Press ESC to get back to the main screen.
8. Jog X and Z axes slowly to the center point of dead center with Tool #1 as shown in Picture 1.
9. Press F1-Setup then F1-Part. Set Z Part Position to 0.0 with Tool #1 and press F10-Set as shown in Screen Shot 2.

**Note:** Part Z0.0 will be set at a different position later when the wheel is mounted onto the lathe.
10. Press **F8-Set X**.

![Screen Shot 3](image)

11. Set X Part Position to 0.0 and move the cursor over to “Set all WCS” field. Toggle to “Yes” by pressing the SPACE BAR as shown in Screen Shot 3 and press **F10-Set**.

12. Press ESC twice to go back to the Setup menu.
13. Press **F2-Tool Offset** to go to the Tool Library to set the X & Z reference. If the “X Diam: and Z Ref:” have not been set yet they will say “Not set” as shown in Screen Shot 4. If there are values in those fields, the next steps will set them correctly for this setup.

Screen Shot 4
14. Move the cursor over to the “X Offset” field. Press **F1-X Diam** to set the X diameter to 0.0 as shown in Screen Shot 5.
15. Now move the cursor over to “Z Offset” field. Press **F1-Z Ref** to set the Z reference to 0.0 as shown in Screen Shot 6.

![Screen Shot 6](image-url)
C: Setting the tool offset for Tool #2.

16. Move Tool #1 away from the spindle and remove Tool #1.
17. Load Tool #2 into the tool post. Press ESC twice to go back to the main screen. Press F3-MDI, type T0202, and press Cycle Start as shown in Screen Shot 7.

Screen Shot 7
18. Move Tool #2 to the X and Z center point. The values that are displayed on the DRO are the difference between the Tool #1 and Tool #2. Press **F1-Setup** then **F2-Tool Offset** to go to the Tool Library to set the offsets for Tool #2.

19. Move the cursor to highlight the “X Offset” field for Tool #2 then press **F2-Measure Tool**.

![Screen Shot 8](image-url)
20. Press **F5-Measure offset X** as shown in Screen Shot 8.

![Screen Shot 9](image)

21. Press **F10-Measure here** as shown in Screen Shot 9 to set the X offset for Tool #2.
22. Move the cursor over to highlight the “Z Offset” field as shown in Screen Shot 10 then press **F6-Measure offset Z**. Press **F10-Measure here** to set the Z offset for Tool #2.

![Screen Shot 10](image)

23. Move the cursor to highlight the “Tool Orient” field and use the SPACE BAR to toggle the description for Tool #1 and Tool #2 to “FFace”. Move the cursor to highlight the “Tool Type” field and use the SPACE BAR to change Tool #1 to “Custom” and Tool #2 to “Turn”.
24. Move the cursor to highlight the “Nose Radius” field. Enter the radius of the insert for Tool #2 and the probe tip radius for Tool #1. If the probe tip diameter is metric, you can press the “=” key then type the probe tip diameter divided by 25.4 divided by 2 – e.g. 2.5/25.4/2 will equal .0492. Move the cursor to highlight the “Nose Vector” field and change it to 7 for both Tool #1 and #2. Move the cursor to highlight the “Description” field and enter the description for the tools being used as shown in Screen Shot 11.

**Note:** The X and Z offset values for Tool #2 will be different for the tool that you are using then what is shown in Screen Shots 8 thru 11.