

BD-07c: Set Home (Cincinnati T-40)**SAFETY FIRST**

- Follow all Caterpillar facility safety standards when performing this task.
- Spindle may need to rotate and axis move which could result in injury to personnel.
- The Operator's station is mobile. Be sure all personnel are clear and you are securely on the platform when operating the Cincinnati.

EQUIPMENT

- P50 Test bar
- Plunger-type dial indicator capable of measuring ten thousandths (0.0001") and a magnetic base
- 4.5 inch indicator gauge block

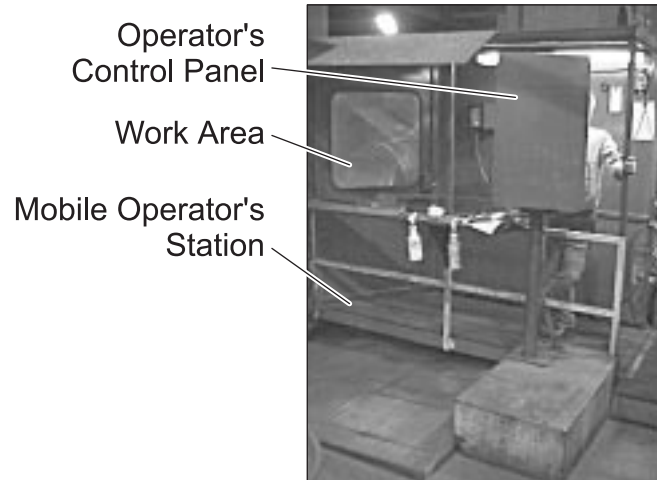
RESOURCES

- Cincinnati Operator's Manual
- Cincinnati Milacron (A950) System Configuration Manual



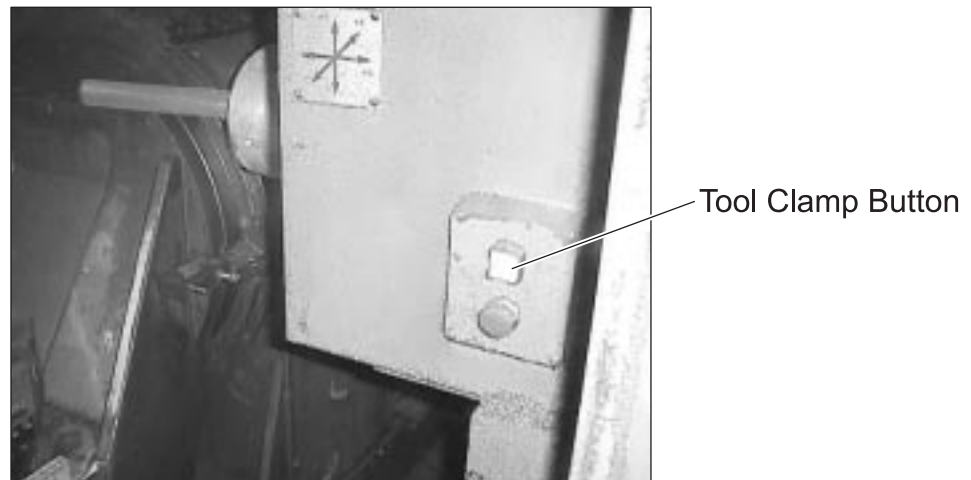
Set Home (Cincinnati T-40)

Warning: The Operator's station is mobile. Be sure all personnel are clear and you are securely on the platform when operating the Cincinnati.



1. Install the test bar.

- Press and hold the tool clamp button on the head.
- Slide the test bar until fully seated.
- Release the tool clamp button.



2. Retract the Z-axis.

- Press the MDI button.
- Press Block: Erase touch monitor prompt before entering new data.



Block: Erase
Touch Monitor
Prompt

- Type M26 and press the <Cycle Start> button.
- Z-axis should fully retract.

3. Clear any active position sets.

- Press Block Erase.
- Type G99 and press <Cycle Start>.

4. Change the measuring system from metric to standard.

- Press Block Erase.
- Type G70 and press <Cycle Start>.

5. Send the A-axis to the upright position.

- Press Block: Erase.
- Type A90 and press <Cycle Start>.



A-axis in Upright
Position

**6. Set the spindle slightly off center.**

- Press Block: Erase.
- Type X2.0Y2.0F1000 and press <Cycle Start>.

7. Move the Z-axis into position for measurement.

- Press Block: Erase.

- Type Z22.5004 and turn the control switch from Local to Remote.



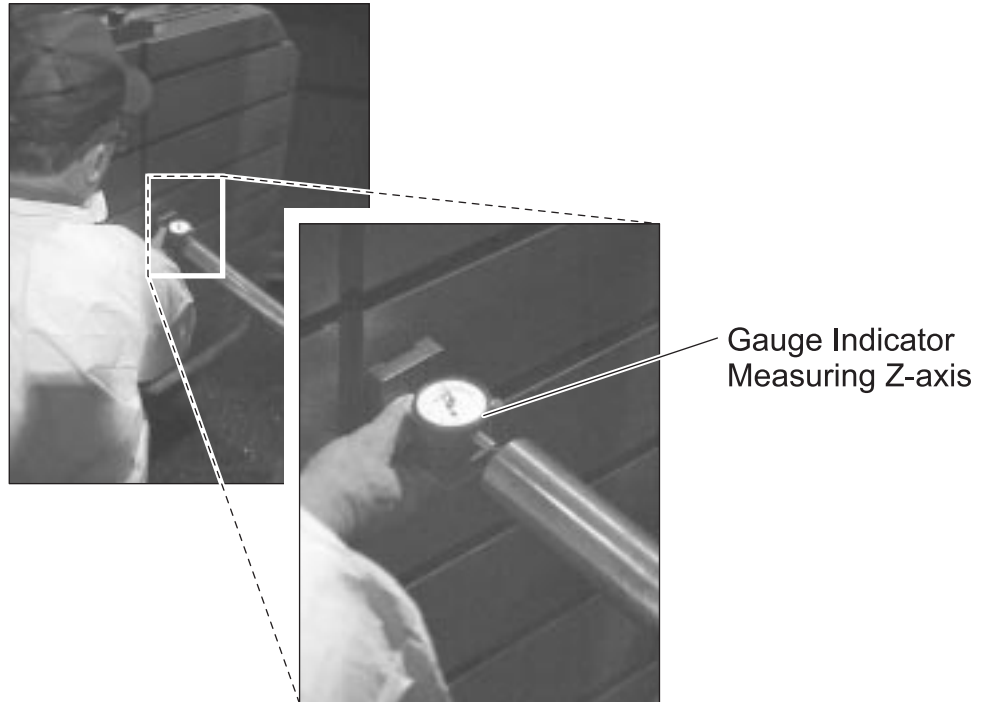
- This distance (22.5004) is the length of the test bar (18.0004 inches) plus the height of the indicator gauge block (4.5 inches).
- Go to the pendant control by the machine door and observe the axis move when you press <Cycle Start> from the remote position.

Pendant Control



8. Set up the 4.5 inch dial indicator gauge block and measure the Z-axis.

- Slide the indicator between the test bar and the table.



- The indicator should read zero to within $\pm .0005$ inch.
- Note any discrepancies and perform step 9 to change the Z-axis value.

9. Edit the Z-axis value for the machine setup.

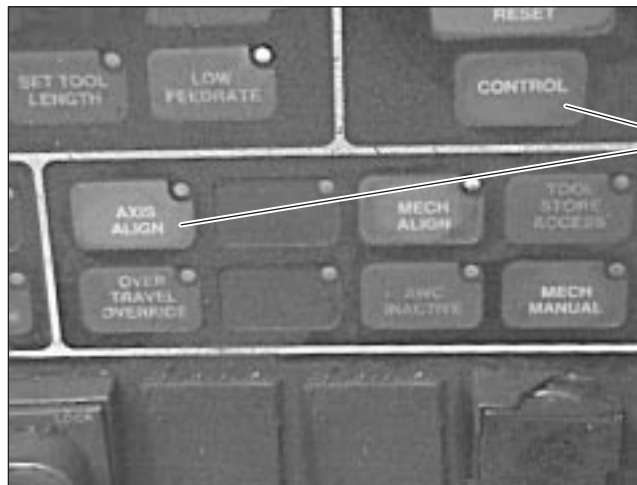
- Press the Machine Setup button.
- Press Access under the System touch screen menu.
- Press Service (or Password, if one is required).
- Press Axis Definition.
- Press the Inch touch screen option to change to the standard measurement system.
- Arrow to Record #3 for the Z-axis.
- Arrow to the right to Trim1 field.
- Press Modify on the touch screen menu.
- Type the modification and press <Enter>.
- Press <Esc> four times.

10. Retract the Z-axis.

- Set the machine to Local from the Remote setting.
- Press MDI, type M26 and press <Cycle Start> to retract the Z-axis.

11. Align the axes.

- Press the Control button and the Axis Align button at the same time to set the changes to Z.



Press CONTROL
and AXIS ALIGN
Simultaneously

- Observe the axes align.

12. Verify any changes made to the Z-axis.

- Repeat steps 7-11 until the Z-axis measurement is within .0005 inch.

13. Enter the changes to the Z-axis to the T-40 Home Position Log.**14. Set up to measure the Y-axis.**

- Press Block Erase.
- Type X0.0F1000 and press <Cycle Start> to send the X-axis to the center of the table.
- Press Block Erase.
- Type Y5.5F1000 and press <Cycle Start> to position the Y-axis for the indicator. (The value 5.5 is 1/2 the diameter of the test bar plus the height of the indicator gauge block.)

15. Measure the Y-axis for error.

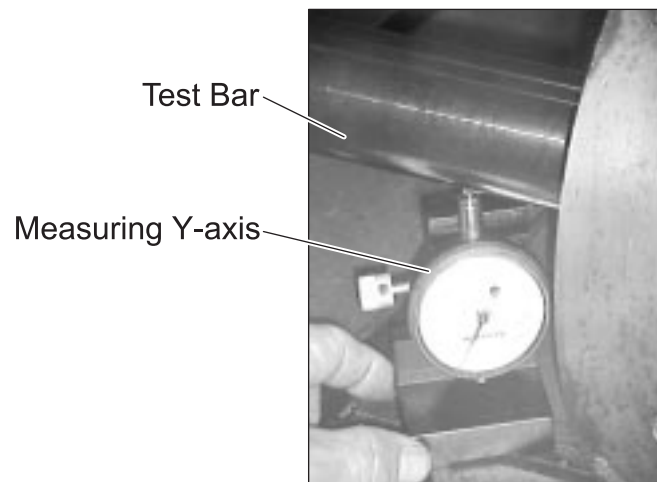
- Set the machine to Remote.
- Position the Z-axis over the table so the test bar is well over the center position.



Test Bar Positioned 5.5"
Above Table & Centered



- Slide the indicator under the test bar, as close as possible to the spindle face.



- Rotate the test bar to determine the maximum and minimum readings.
- Stop the bar exactly halfway between.
- Expect to read within .0005 inch, noting any discrepancies.

16. Edit the Y-axis value for the machine setup.

- Press the Machine Setup button.
- Press Access under the System touch screen menu.
- Press Service (or Password, if one is required).
- Press Axis Definition.
- Press the Inch touch screen option to change to the standard measurement system.
- Arrow to Record #2 for the Y-axis.
- Arrow to the right to Trim1 field.
- Press Modify on the touch screen menu.
- Type the modification and press <Enter>.
- Press <Esc> four times.

17. Retract the Z-axis.

- Set the machine to Local from the Remote setting.
- Press MDI, type M26 and press <Cycle Start> to retract the Z-axis.

18. Align the axes.

- Press the Control button and the Axis Align button at the same time to set the changes to the Y-axis.
- Observe the axes align.

19. Verify any changes made to the Y-axis.

- Repeat steps 14-18 as needed until the Y-axis is within .0005 inch.

20. Enter the changes to the Y-axis to the T-40 Home Position Log.**21. Set up to measure the X-axis.**

- Press the MDI button.
- Press Block Erase.
- Type X0.0F1000 and press <Cycle Start> to send the X-axis to the home position.
- Press Block Erase.
- Type Y10.0F1000 and press <Cycle Start>.

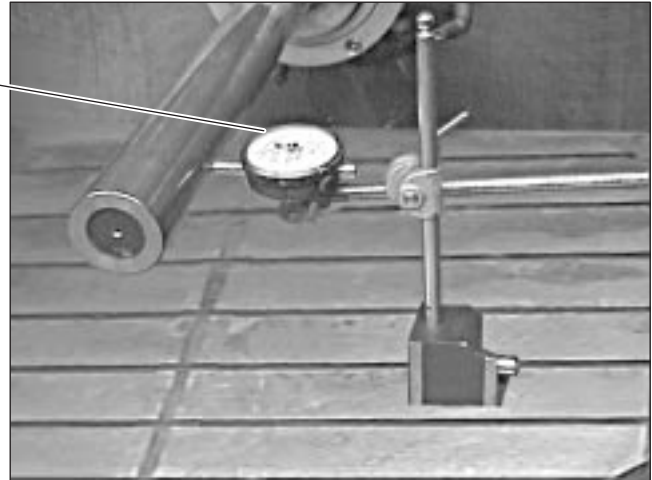


22. Measure the X-axis for error.

- Set the machine to Remote.
- Position the Z-axis over the table so the test bar is well over the center position.
- Set the indicator so it is against the side of the test bar near the center keyway.



Indicator Positioned
to Measure X-axis



- Find the high point of the test bar.
- Type M03S20 and press <Cycle Start>.
- Zero the indicator so that the middle point of the test bar runout is the zero on the indicator.
- Record the Y-axis position.
- Type YXX.XXXXXF1000 (where XX.XXXX is the current Y-axis position plus 10) and press <Cycle Start>.
- Press Block: Erase.

- Type B180 and press <Cycle Start> to rotate the table 180 degrees on the B-axis.



B-axis Rotated 180°

- Press Block Erase.
- Type the previously recorded Y-axis position and F1000, then press <Cycle Start> to return the test bar to the same Y-axis position.



Test Bar Repositioned
to Measure X-axis

- Expect to read zero (0) to within .0005 inch, noting any discrepancies.

23. Edit the X-axis value for the machine setup.

- Press the Machine Setup button.
- Press Access under the System touch screen menu.
- Press Service (or Password, if one is required).



- Press Axis Definition.
- Press the Inch touch screen option to change to the standard measurement system.
- Arrow to Record #1 for the X-axis.
- Arrow to the right to Trim1 field.
- Press Modify on the touch screen menu.
- Type the modification and press <Enter>.
- Press <Esc> four times.

24. Retract the Z-axis.

- Set the machine to Local from the Remote setting.
- Press MDI, type M26 and press <Cycle Start> to retract the Z-axis.

25. Align the axes.

- Press the Control button and the Axis Align button at the same time to set the changes to the X-axis.
- Observe the axes align.

26. Verify any changes made to the X-axis.

- Repeat steps 21-25 as needed until the X-axis is within .0005 inch.

27. Enter the changes to the X-axis to the T-40 Home Position Log.