

BD-07f: Set Home (MSI)**SAFETY FIRST**

- Follow all Caterpillar facility safety standards when performing this task.
- The spindle may need to rotate and the axis move, resulting in possible injury to personnel.

EQUIPMENT

- Test bar
- plunger type dial indicator capable of measuring ten thousandths – 0.0001”
- magnetic base
- 4.5 inch block indicator

RESOURCES

- MSI Operator’s Manual

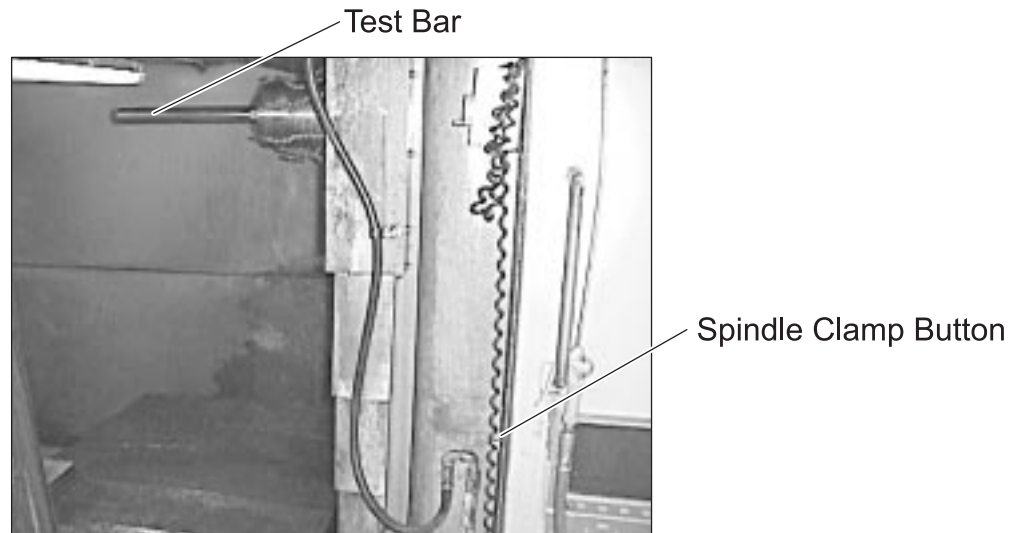
Set Home (MSI)

Note: Verify that the control is set in the Inch mode.

Y-axis

- 1. Ask the Operator to place a clean, empty pallet onto the machine before you begin.**
- 2. Home the axes.**
 - Press <Mode Select> 0 (Jog) and press either 0, 1, 2, or 3 for the jog speed.
 - Jog axes in the minus (-) direction.
 - Press H (home) and move Z jog switch in the positive (+) direction.
 - Move X, Y, and B jog switches in the positive (+) direction.

3. **Manually remove the tool from the spindle.**
 - Set the mode to Jog.
 - Move the Y-axis down and Z-axis forward until the tool is reachable.
 - Turn off the Spindle.
 - Press the spindle Clamp button to unclamp the tool.
 - Remove the tool.
4. **Install the test bar.**
5. **Press the spindle Clamp button to clamp the test bar in place.**



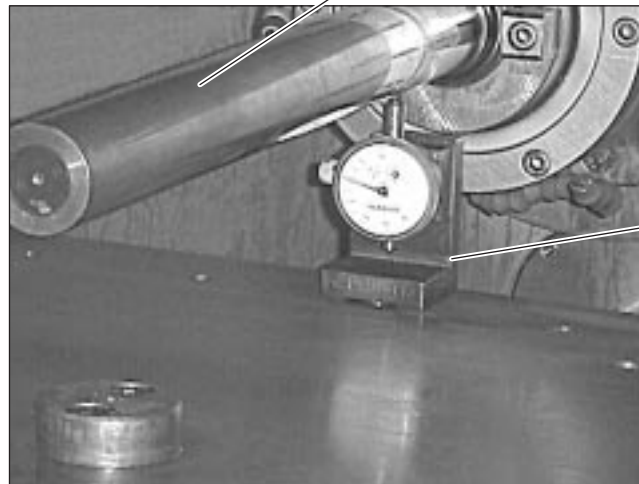
6. **Set the table to center.**
 - Press <Mode Select> then press 3 for Program.
 - Type N. (an N and a period) and press <Enter>.
 - Type X0 and press <Enter>.
 - Press <Cycle Start>.
 - Observe the table move to the center position.

7. Move the Y-axis 5.5" above the table.

Note: The value 5.5 inches is $1/2$ the diameter of the test bar + the 4.5 inches of the indicator gauge block.

- Press <Mode Select> and press 3 for Program.
- Type N. (N period) and press <Enter>.
- Type Y5.5 and press <Enter>.
- Press <Cycle Start>.
- Observe the Y-axis move.
- Jog the Z-axis (-) as far as possible without going into over travel.
- Set the indicator gauge block on the table as close to the spindle face as possible.

Test Bar 5.5" from Table



Indicator Gauge
Block Located
Near Spindle Face

- Slide the indicator gauge block back and forth to find the center of the test bar.
 - Start the spindle at 20 RPM or less.
 - Increment the Y-axis until the mean of the test bar runout is zero on the indicator.
- 8. Ask the Electrician to compensate the Y-axis from the feedback device, if necessary.**
- Turn off the axes.
 - Monitor the Y-axis value on the control panel, communicating with the Electrician as the feedback device is adjusted to read 5.5 inches.

Z-axis

9. Set up the indicator to measure the Z-axis.

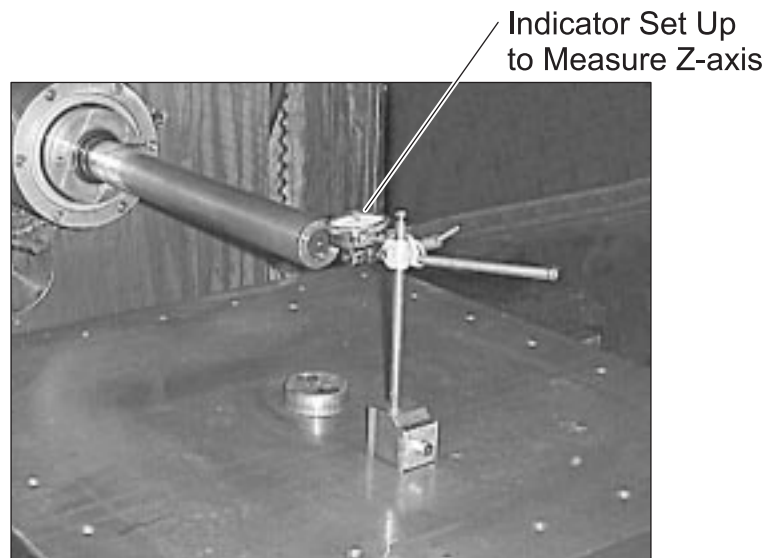
Note: This measurement is from the centerline of the table to the gauge length of the test bar (18.0004 inches).

10. Move the Y-axis to 10" above the tabletop.

11. Measure the Z-axis.

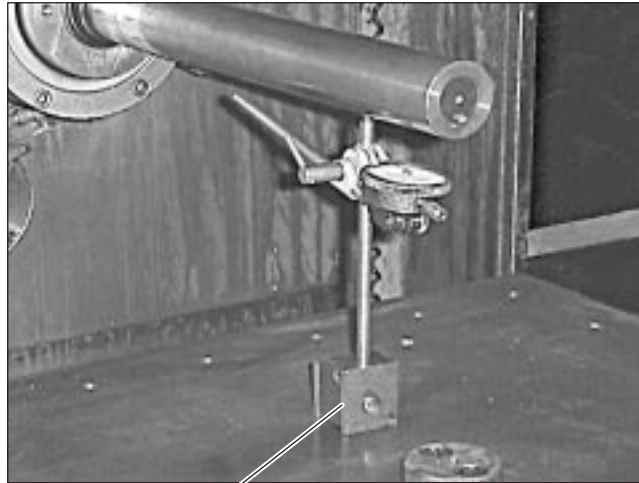
12. Set the table to center.

- Press <Mode Select> and press 3 for Program.
- Type N. (N period) and press <Enter>.
- Type Z18.0004 and press <Enter>.
- Press <Cycle Start>.
- Observe the table move to the center position.
- Position the magnetic base indicator on the table with the indicator reading the bottom end of the test bar with one revolution of pre-load.



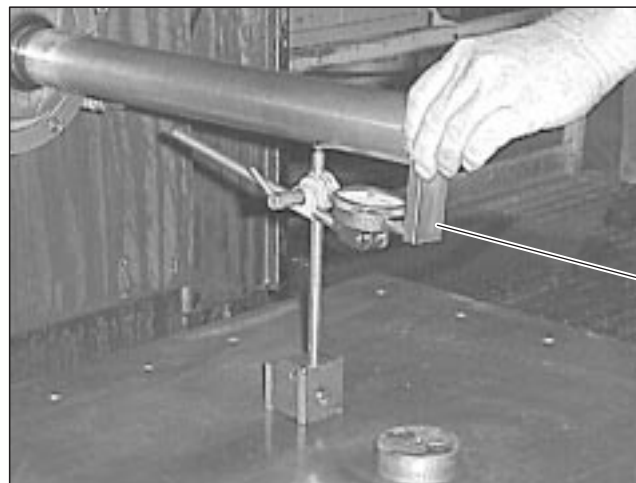
13. Move the Y-axis an additional 10" in the positive direction.

14. Rotate the B-axis 180 degrees.
15. Lower the Y-axis as close as possible to the indicator.



B-axis Rotated 180°

16. Place a Jo-block against the end of the test bar and indicator.



Measuring Z-axis
with Jo-Block

17. If an error is indicated, increment the Z-axis 1/2 the difference in the indicator readings.
18. Repeat steps 10-17 until the indicator reading is within .0005 inch.

19. Ask the Electrician to compensate the Z-axis from the feedback device, if necessary.

- Turn off the axes.
- Monitor the Z-axis value on the control panel, communicating with the Electrician as the feedback device is adjusted to read the gauge length of test bar as noted in step 9.

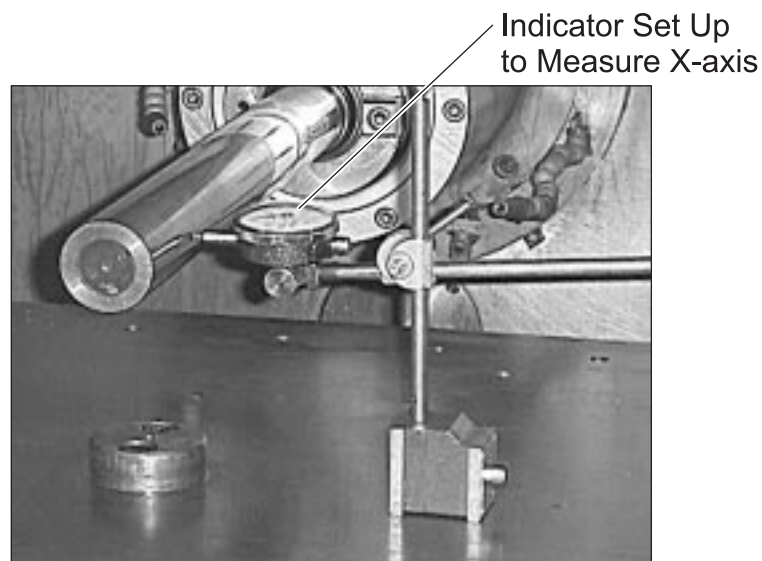
X-axis

20. Set the table to center.

- Press <Mode Select> and press 3 for Program.
- Type N. (N period) and press <Enter>.
- Type X0 and press <Enter>.
- Press <Cycle Start>.
- Observe the table move to the center position.

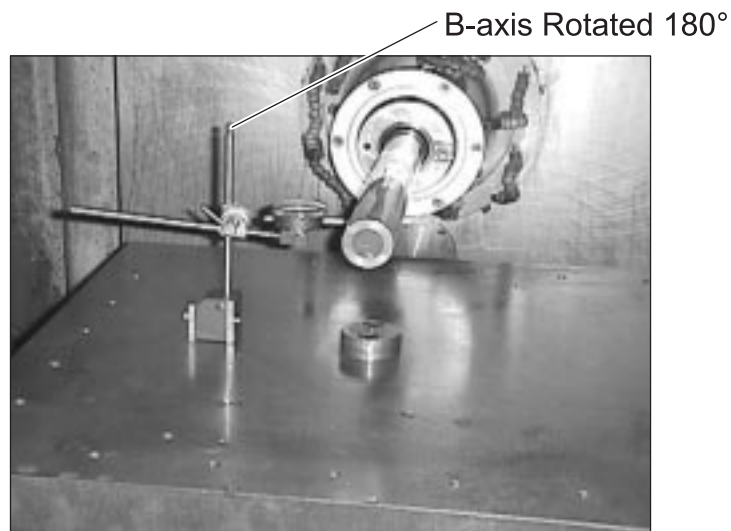
21. Set up the dial indicator to measure the X-axis.

- Position the indicator at the center of the table.



- Move the Y-axis (+) and (-) to locate the center of the test bar.

22. **Determine test bar runout.**
 - Turn on the spindle to a low RPM (20 RPM or less).
 - Zero the indicator on the high point of the test bar runout.
23. **Note the Y-axis positions.**
24. **Move the Y-axis for proper clearance to allow the B-axis rotation.**
25. **Rotate the B-axis 180 degrees.**
26. **Return the Y-axis to the same position.**



27. **Measure the X-axis again.**
 - Compare the indicator readout to the reading in step 24.
 28. **Calculate the amount that the tool bar is off center.**
- Note:** Off center is the difference in the expected value for the X-axis and the actual value (the value displayed when you are located to within .0005") displayed on the control panel.
- If the measurement is greater in the right hand direction of the indicator, the change is positive (an increase); or if the change is greater in the left hand direction the change is negative (a decrease).
 - Increment the axis 1/2 the calculated value in the required direction.
 - Reset the indicator to zero and return to step 20.

29. **Repeat steps 24-28 until the reading is within .0005 inch.**
30. **Ask the Electrician to compensate the X-axis from the feedback device, if necessary.**
 - Turn off the axes.
31. **Monitor the X-axis value on the control panel, communicating with the Electrician as the feedback device is adjusted to read zero.**

