

BD-07e: Set Home (Gray VTL)

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.

EQUIPMENT

- P50 Test bar
- Plunger-type and lever-type dial indicators capable of measuring ten thousandths (0.0001”) with magnetic base
- 4.5 inch indicator gauge block

RESOURCES

- Gray VTL Operator’s Manual

Set Home (Gray VTL)

1. **Ask the Operator to provide an empty, clean pallet.**

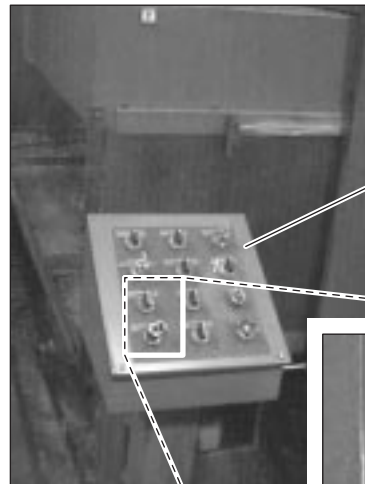


Empty Pallet

2. **Move the spindle to the center of the table.**
 - Type G0X0 and press <Cycle Start>.

3. Install the test bar.

- In MDI mode, press Block Erase.
- Type M6 and press <Cycle Start> to change the tool to a small tool.
- Ask an assistant to go to the Tool Change Control and switch the control to turn Manual Override ON.



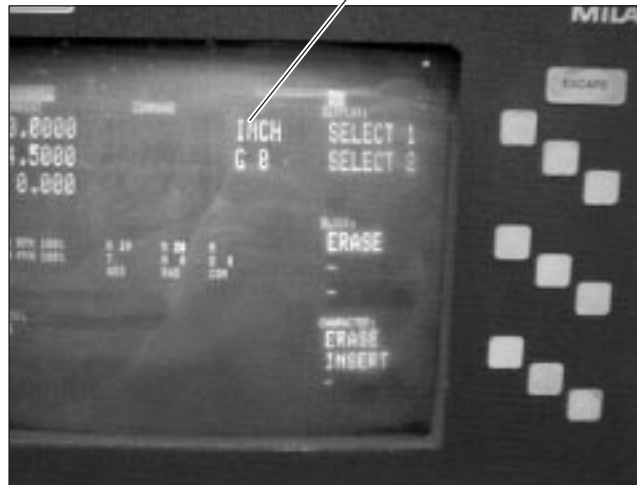
- Signal the assistant to switch the key to Unclamp and to hold the tool clamp button until you remove the tool and install the test bar.
- Insert the test bar until seated.
- Signal the assistant to Clamp the spindle.

4. Change the measuring system from metric to standard (inch).

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



INCH Must Display
for Standard Measurement

**5. Activate the table.**

- Press Block Erase.
- Type M21 and press <Cycle Start>.

6. Free the spindle rotation.

- Press Block Erase.
- Type S50M5 and press <Cycle Start>.

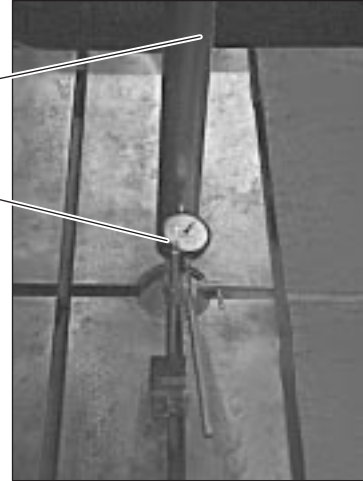
7. Set up the indicator to measure the X-axis.

- Place the indicator and magnetic base on the table with the indicator touching the test bar.



Test Bar with Free Spindle

Indicator Set Up on X-axis



- Locate the high point and eliminate runout.

8. Move the table in 90 degree increments.

- Type F100C90 and <Cycle Start> to move the table 90 degrees.

Indicator After
Rotating Table 90°

- Observe the indicator and note any discrepancies from zero.

Note: Any discrepancies exceeding zero by more than .0005 in the 90 degree and 270 degree positions may require repairs to the gib.

- Type F100C180 and <Cycle Start> to move the table another 90 degrees to the 180 degree position.

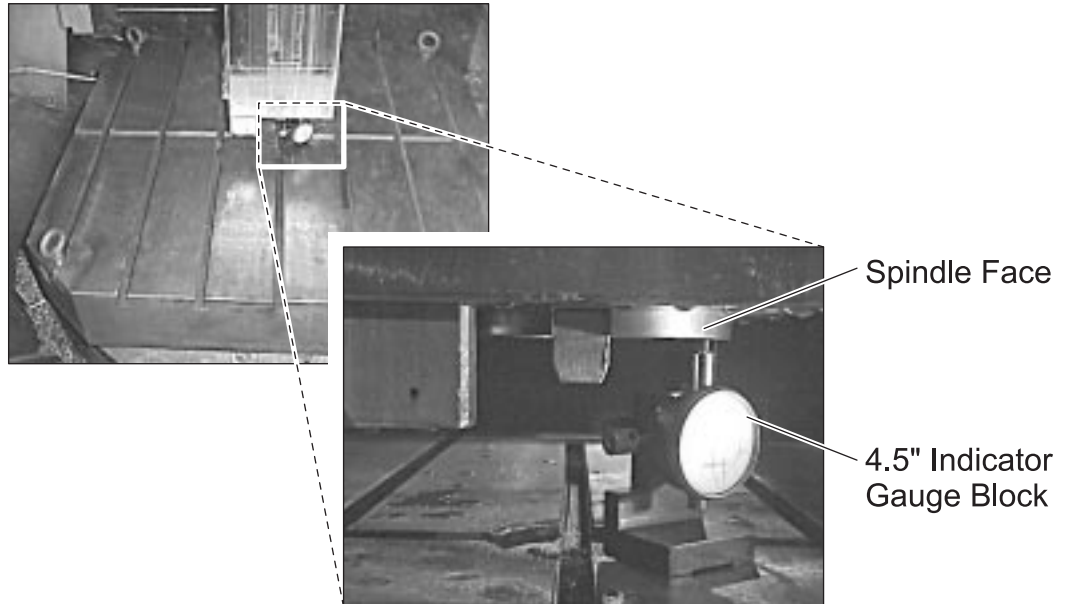
Indicator After Rotating
Table 180°



- Observe the indicator and note any discrepancies from zero; record the value.
 - Type F100C270 and <Cycle Start> to move the C-axis to the 270 degree position.
- 9. Ask the Electrician to follow the procedure to change the X-axis parameter (No. 56 X-axis Align Trim).**
- 10. Verify the changes to the X-axis.**
- Press the Axis Home key.
 - Recheck the X-axis.
- 11. Remove the test bar.**
- Reverse the procedure in step 3 to remove the test bar.
 - Reinstall the tool that was removed.
- 12. Set up machine to measure the Z-axis.**
- Type M2 and press <Cycle Start> to put the tool away.
 - Type F100C0 and press <Cycle Start> to move the table back to the 0 degree position.
 - Type G70 to return the machine to the Inch measurement mode.
 - Type G0Z4.5 and press <Cycle Start>.

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

- Slide the indicator between the spindle face and the table.



- The indicator should read zero to within ± 0.0005 inches.
- Note any discrepancies.

14. Ask the Electrician to change the value for the Z-axis Align Trim for Rail Position 3 (No. 114) to change the Z-axis value.**15. Verify the changes to the Z-axis.**

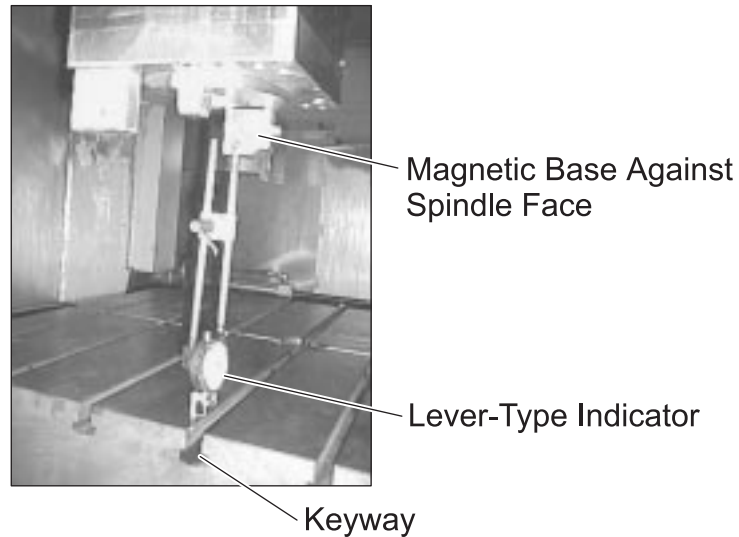
- Press the Axis Home key.
- Recheck the Z-axis.

16. Set up to measure the C-axis.

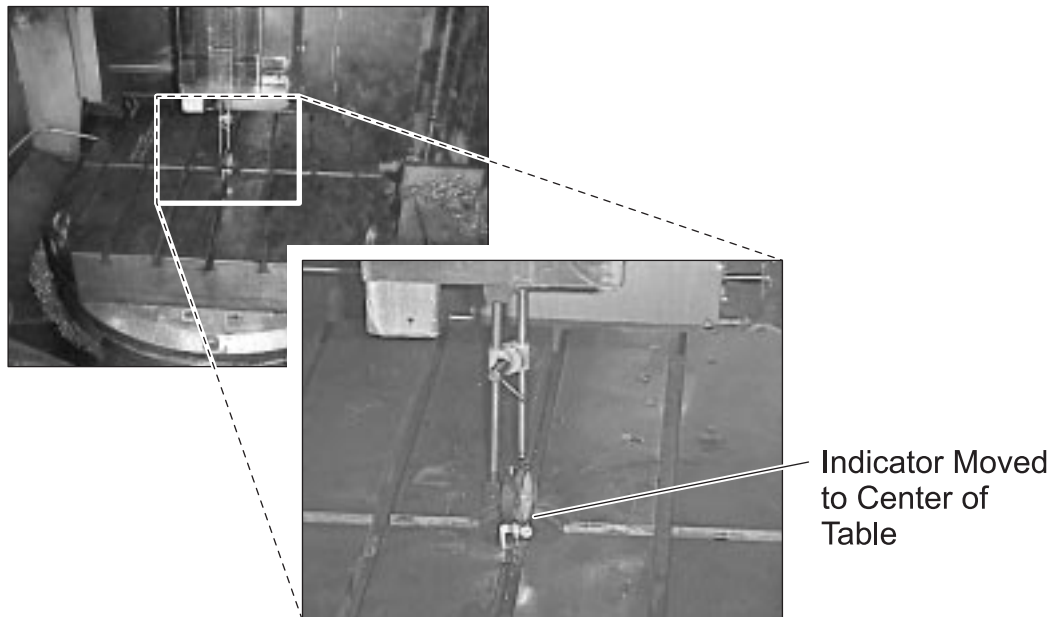
- Press Block Erase.
- Type M21 and press <Cycle Start>.
- Press Block Erase.
- Type F100C10 and press <Cycle Start>.
- Press Block Erase.
- Type F100C0 and press <Cycle Start> to position the C-axis for the indicator.

17. Measure the C-axis for error.

- Move the spindle to the edge of the table.
- Set up the lever-type indicator on the keyway.



- Move the X-axis until the indicator is almost to the center of the table.



- Readings should be within .0005 inch.



- Remember, if the table is out of alignment, the changes to the table are in degrees. So if the readings are .007 inch, then the change in degrees is .1 degrees.

0.007 inch=0.1degrees

- Change the value with a positive number if the change is clockwise and negative if the change is counterclockwise.
- Note any discrepancies.

18. Ask the Electrician to change the C-axis Align Trim on Position #46.

19. Verify the changes to the C-axis.

- Press the Axis Home key.
- Recheck the C-axis.

20. Restart and verify any changes made to the C-axis.

- Repeat steps 14 and 15 as needed until the C-axis is within .0005 inch.