

Mechanical Alignment of Spindle.

Equipment:

Magnetic Cylindrical Square.
Electronic Indicator.
Heavy Duty Magnetic Stand.

Purpose:

To ensure the spindle center line is parallel to the motion of the Z axis.

Tolerance:

Z axis parallel to Spindle within 5 arc seconds. (25u" per inch)

Method.

1. Attach the 4½" magnetic cylindrical square to the nose of the spindle, visually adjust the position of the cylindrical square, until it rotates with out wobble.
2. Using the electronic indicator, adjust the concentricity of the cylindrical square to the spindle, to within 50u" T.I.R.
3. Find a suitable means of holding the spindle from rotating (tape) and lock it in position. Make a mark (with a marker pen) on the spindle or cylindrical square to reference the top of the spindle.
4. Place the indicator tip on the top of the cylindrical square and set to zero, move the indicator from one end to the other, and record the results.
5. Without disturbing the spindle cylindrical square relationship, rotate the spindle and cylindrical square 180° so that the mark is at the bottom.
6. With the indicator on the bottom of the cylindrical square and set to zero, move the indicator from one end to the other, and record the results.
7. One half of the difference between the two readings is the true amount of error between the spindle and the Z-axis.
8. Locate the spindle adjustment screws on the rear end of the spindle, and make an adjustment for the error.
9. Repeat from 4. Above until the error is within tolerance.
10. Set horizontal error by repeating from step 4, with the indicator at the front and back of the cylindrical square, instead of the top and bottom.
11. After adjustment, repeat the entire procedure, adjusting horizontal will affect vertical.