Spindle Face Alignment. (Horizontal LVDT Height)

Equipment.

> Torque wrench/screwdriver (15inch/lbs).
> 2.5mm Allen wrench.
> 2 x Mechanical Indicator.
> Magnetic Base.
> Universal surface gauge
> Tool setter
> Set-up pin. (Part # 3203-139ZZ)

Purpose.

> To set the horizontal LVDT on spindle center line.

Tolerance.

> ±0.0005" (0.013mm)

Method. (Testing)

1. Measure the smaller diameter of the set-up pin, and record the result.

2. Measure the diameter of the probe tip assembly and record the result. (Note: the diameter of the stainless steel part of the tip should be measured, not the ruby.)

3. Subtract the setup-up pin diameter from the probe tip diameter, and divide the result by two. Record this as the height offset.

4. Insert the set-up pin in to the collet.

5. Attach the dial indicator to the X-axis, in such a position that it may be positioned on the set-up pin, or the probe tip, by moving the axis only, and not removing the indicator.

6. Move the dial indicator to the set-up pin, and by moving the X-axis find the high point.

7. Revolve the spindle to ensure the pin is true in the collet. A small side load may be exerted on the pin for truing.

8. Set the dial indicator to zero at a point half way in-between the high and low points found while rotating the spindle. Move the indicator away from the pin by moving the X and Z-axis not the gauge.

9. Remove the pin, and Insert the tool setter into the collet.

10. Move the indicator to the probe tip and by moving the X-axis locate the high point. This reading should equal the height offset recorded above,

within the above tolerance. If the reading is out of tolerance, follow the setting instructions below.

Method. (Setting)

1. Follow the testing procedure above to establish the amount and which way to adjust the spindle face plate.

2. Remove the face plate bolt that is approximately at the 3 o'clock position.

3. Attach a second mechanical indicator, to indicate in the empty bolt hole.

4. Knowing the amount the tool setter LVDT must be moved, and its distance from the spindle center line (26mm), and knowing the pitch circle diameter (PCD) of the bolt holes, the amount the face plate must be rotated, while measuring the at the bolt hole can be calculated. See calculation method below.

5. Loosen the remaining face plate bolts, and rotate the face plate the desired amount.

6. Re-torque the faceplate bolts to 15inch/lbs (1.7Nm), ensuring the plate does not move.

7. Remove the second mechanical indicator, re-insert the last face plate bolt, and re-torque.

8. Repeat the testing procedure above, for verification.

Calculation Method.

PCD = Pitch Circle Diameter of the spindle faceplate retaining bolts. (87.55)

N = The vertical adjustment required at the LVDT.

$$Adjustment = \frac{\left(\frac{PCD}{2}\right)}{26} \times N \quad \text{Simplified...} \quad Adjustment = 1.684 \times N$$